

## Cover report to the Trust Board meeting to be held on 5 September 2019

Trust Board paper M

<b>Report Title:</b>	Finance and Investment Committee – Committee Chair’s Report (formal Minutes will be presented to the next Trust Board meeting)
<b>Author:</b>	Hina Majeed, Corporate and Committee Services Officer

<b>Reporting Committee:</b>	Finance and Investment Committee
<b>Chaired by:</b>	Martin Traynor, Non-Executive Director
<b>Lead Executive Director(s):</b>	Paul Traynor, Chief Financial Officer Rebecca Brown, Chief Operating Officer Mark Wightman, Director of Strategy and Communications
<b>Date of last meeting:</b>	29 August 2019

**Summary of key matters considered by the Committee and any related decisions made:**

This report provides a summary of the following key issues considered at the Finance and Investment Committee on 29 August 2019:-

- **Children’s Hospital Project Phase I (East Midlands Congenital Heart Centre (EMCHC) Co-location) Full Business Case** – paper C detailed the combined outline and full business case describing the drivers for change that underpinned the move of the EMCHC service from the Glenfield Hospital (GH) to the LRI. It identified the capital and revenue required in order to support the relocation of the paediatric element of the EMCHC from the GH to the LRI, whilst developing the model of care for the Adult Congenital Heart Disease (ACHD) service, which would remain at the GH. Members noted that the total capital cost of this scheme was £14.174m, of which £7.874m would be funded from capital identified within UHL’s Capital Resources Limit, and up to £6.3m would be sourced from charitable funding. The Chief Executive re-iterated that the scheme would need to be kept within budget, as no cost escalations could be accommodated within the constraints of the capital programme. FIC commended the quality of the business case (as appended to this meeting summary), supported it, and recommended it for Trust Board approval on 5 September 2019.
- **2019/20 Month 4 Financial Performance** – paper D advised that the Trust had achieved a year-to-date financial deficit of £22.5m, excluding Provider Sustainability Funding (PSF), Financial Recovery Funding (FRF) and Marginal Rate Emergency Tariff (MRET). Including PSF/FRF/MRET, the Trust had achieved a year-to-date deficit of £13.4m which was in line with plan. Urgent and emergency care activity was over-performing against plan by £7.0m, although this was offset by the blended tariff adjustment of £2.4m and the cost of delivering this additional activity. Under-performance in elective activity was becoming apparent which was partly due to changes in the pension tax annual allowance. Six of the CMGs and the Estates and Facilities Directorate were now reporting a variance against plan in month 4. The Chief Financial Officer would lead a deep dive process into all CMGs to fully understand the drivers for their variances and to validate their respective positions.
- **2019/20 Capital Programme** – paper G updated the Committee on the capital programme for 2019/20 which had been constructed on the basis that no external funding would be made available. The total remained at £40.5m. Members were informed of the confirmation of centrally available funding for investment within IM&T at a value of £1.3m. NHSI/E had confirmed that the applications for emergency capital made as part of the original capital plan were now being reviewed but had not yet been approved. The value of these applications was £10m for emergency capital schemes and £8.6m as emergency capital funding for the centralised decontamination business case. The Finance team continued to liaise with NHSI/E colleagues to progress the decision on the two emergency capital funding applications. In addition, members were advised that a revised draft of the 5 year capital programme would be discussed at the next meeting of the Capital Monitoring and Investment Committee (CMIC) with an updated paper being submitted to the September FIC.
- **UHL Productivity Improvement Programme (PIP)** – paper H provided an overview of UHL’s Productivity Improvement Programme, advising that savings of £26.8m had been identified against the 2019/20 target of £26.6m. In the absence of the Director of Productivity at this meeting, the report was taken as read. The Chief Financial Officer highlighted that securing additional efficiency schemes would be one of the aspects that would be covered within the deep dive process into CMGs mentioned above. There was a brief discussion on outpatient activity to be undertaken in 2019-20.
- **Future of the LLR Alliance – Post Workshop Update** – Ms H Mather, Alliance Director attended the meeting to present paper I. The LLR Alliance Contract which had commenced in 2014 was on a 3+2+2 basis. The current contract was in the first year of the last 2 year element. At the Commissioning Collaborative Board in February 2019, a discussion took place

regarding the future of the Alliance both in 2021 and post 2021. At that meeting, it was suggested that a workshop with all stakeholders be held to review the context of the Alliance in light of the NHS 10-Year Long Term Plan and the development of an LLR Integrated Care System (ICS) workstream. This workshop took place on 18 June 2019 and paper I detailed the outputs of this event. The workshop concluded that the current Alliance model had been successful in many ways, however, there had been areas where it did not achieve its true potential. There was support that the current model would need to change as part of the Integrated Community Services work, however, it was too early in the ICS system development to say what these changes would be. There was over-arching support for the Alliance and agreement that lessons learnt should be incorporated into the relevant ICS model and provider Alliance plans. Members were advised that a number of suggestions were under discussion for development and implementation over the coming months. The Director of Strategy and Communications provided a brief description of UHL's role in an ICS, interface with other providers in an ICS and how might an Alliance/ICS help address the prevailing challenges.

- **Update on UHL's Commercial Strategy and Intellectual Property (IP) Policy** – in discussion on this matter, it was agreed that Mr A Johnson, Non-Executive Director and the Chief Financial Officer would liaise with the Director of Corporate and Legal Affairs outwith the meeting regarding the IP Policy and the scope to broaden the policy to cover all eventualities, and
- **Items for scrutiny and information** – the Committee received and noted the following reports for information:-  
 Paper K – Timetable for UHL Business Case Approvals;  
 Paper L – FIC Calendar of Business 2019/20;  
 Paper M1 – action notes from the Executive Quality and Performance Board meeting held on 9 July 2019, and  
 Paper M2 – action notes from the Executive Quality and Performance Board meeting held on 23 July 2019.

**Matters requiring Trust Board consideration and/or approval:**

**Recommendations for approval**

- **Children's Hospital Project Phase I (East Midlands Congenital Heart Centre (EMCHC) Co-location) Full Business Case**

**Items highlighted to the Trust Board for information**

- None

**Matters referred to other Committees:**

- None

<b>Date of next meeting:</b>	26 September 2019
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# Children's Hospital Project Phase I: (EMCHC) Co-Location) Full Business Case

Author: Alex Morrell

Sponsor: Mark Wightman

Date: 30<sup>th</sup> August 2019

## Executive Summary

### Context

This combined Outline Business Case (OBC) and Full Business Case (FBC) describes the drivers for change that underpin the move of the East Midlands Congenital Heart Centre (EMCHC) service from the Glenfield Hospital (GH) to the Leicester Royal Infirmary (LRI). It identifies the capital and revenue required in order to support the relocation of the paediatric element of the EMCHC, whilst developing the model of care for the Adult Congenital Heart Disease (ACHD) service, which will remain at the GH.

### Questions

1. What are the key points detailed within the FBC?

### Conclusion

1. The checklist front cover sheet provides all of the key points detailed within the FBC.

### Input Sought

The Trust Board are asked to:

- DISCUSS the key points of the FBC
- APPROVE the Children's Hospital Project Phase I (EMCHC co-location) FBC for onward submission to the UHL Trust Board

# For Reference

Edit as appropriate:

1. The following objectives were considered when preparing this report:

Safe, high quality, patient centred healthcare	Yes
Effective, integrated emergency care	Yes
Consistently meeting national access standards	Yes
Integrated care in partnership with others	Yes
Enhanced delivery in research, innovation & ed'	Yes
A caring, professional, engaged workforce	Yes
Clinically sustainable services with excellent facilities	Yes
Financially sustainable NHS organisation	Yes
Enabled by excellent IM&T	Yes

2. This matter relates to the following governance initiatives:

Organisational Risk Register	Not applicable
Board Assurance Framework	Not applicable

3. Related Patient and Public Involvement actions taken, or to be taken: Not applicable

4. Results of any Equality Impact Assessment, relating to this matter: See Appendix 5

5. Scheduled date for the next paper on this topic: Not applicable

6. Executive Summaries should not exceed 1 page. My paper does comply

7. Papers should not exceed 7 pages. My paper does not comply

## UHL Strategic Reconfiguration Business Cases

**Name of Business Case:** *Children's Hospital Project Phase I (EMCHC co-location) – combined Outline Business Case and Full Business Case*

**Forum:** *UHL Trust Board*

**Checklist Completed by:** *Alexandra Morrell, Reconfiguration Project Manager*

**Project SRO:** *Mark Wightman, Director of Strategy and Communications*

**Background**

The nationally renowned East Midlands Congenital Heart Centre (EMCHC) is co-located at the Glenfield Hospital (GH) with the adult Cardiology and Cardiac Surgery department in purpose-built facilities that cater for patients with congenital heart disease from before birth, in childhood and through adulthood.

The EMCHC is a Level 1 Congenital Heart Disease (CHD) Centre, commissioned by NHS England. Some cardiac outpatient and non-specialist cardiology services are locally commissioned by Clinical Commissioning Groups (CCGs). It is a quaternary centre, staffed by a highly skilled multi-disciplinary team, providing highly specialised care for people with CHD from across the East Midlands region as well as further afield.

The effectiveness of the service was rated as Outstanding by the Care Quality Commission (CQC) when it was last inspected in January 2017, the only service to achieve this rating at the Glenfield Hospital.

In 2014, the New Cardiac Review was published by NHS England, which included a set of national standards to which all Level 1 CHD Centres must comply. Amongst other stipulations, these include the requirement for each centre to:

- Employ at least four congenital cardiac surgeons by 2021;
- Ensure that each cardiac surgeon carries out a minimum of 125 operations per year, averaged over three years;
- Ensure that paediatric cardiac services are co-located with other paediatric services by April 2019 (this date has since been revised to December 2020, with agreement from NHS England).

In order to meet these standards and the associated increased activity for the children's congenital heart service, there needs to be more physical space, greater operational capacity and the service needs to be re-located to the Leicester Royal Infirmary (LRI) to sit alongside the other paediatric services.

This combined Outline Business Case (OBC) and Full Business Case (FBC) describes the drivers for change that underpin the move of the EMCHC service from the GH to the LRI. It identifies the capital and revenue required in order to support the relocation of the paediatric element of the EMCHC from the GH to the LRI, whilst developing the model of care for the Adult Congenital Heart Disease (ACHD) service, which will remain at the GH.

The total capital cost of this FBC is 14.174m, of which £7.874m is funded from capital identified within UHL's Capital Resources Limit, and up to £6.3m is from charitably funded sources.

The scheme is a key enabler for the Intensive Care and associated services project (separately funded business case), as it vacates the theatre capacity at the GH required for the Hepato-biliary (HPB) and Renal Transplant services to move from the Leicester General Hospital (LGH) to the GH.

Based on current assumptions, the paediatric CHD service will move to the LRI in December 2020, aligning with the deadline for co-location agreed with NHS England (the project programme can be found in appendix 24).

This case was approved at EQPB on 13<sup>th</sup> August and FIC on 29<sup>th</sup> August for onward approval at the UHL Trust Board on 5<sup>th</sup> September 2019.

Lessons learned from the EF review of Phase 1, the Vascular project and the ICU project are being intrinsically built into the project management of this project.

Appendices are available upon request.

<p><b>Confirm Commissioner support:</b></p>	<p>The project is being undertaken in order to provide the capacity and same site location requirements in order to meet NHS England Congenital Heart Disease standards.</p> <p>The Project Board includes a representative from the LLR CCG's and NHSE. Whilst the value of this case does not require external approval from NHSE or NHSI, however the FBC has been formally supported by the NHSE regional commissioning team.</p>
<p><b>Confirm Stakeholder support:</b></p>	<p>Internal stakeholders (clinicians, infection prevention, estates) have been consulted throughout the development of the clinical models of care, operational policies and designs which inform this business case, and have signed off all models of care, policies, plans, c-sheets and derogations.</p> <p>A patient representative has been a member of the Project Board from its inception, and has also been engaged through the design development process. A full version of the project communications and engagement plan is appended to the FBC.</p>

	Business Case Reference
<p><b>What is the purpose of this project?</b></p> <p>The purpose of the project is to move the paediatric element of the East Midlands Congenital Heart Centre (EMCHC) from the Glenfield Hospital to the Leicester Royal Infirmary (LRI), whilst providing the increased capacity in order to meet minimum activity levels as described within the NHS England Congenital Heart Disease Services Specification</p>	<p>2.2 2.3.11</p>
<p><b>Why is it being carried out?</b></p> <p>The delivery of this project will secure the future of the East Midlands Congenital Heart Centre, through the provision of the paediatric space and associated capacity at the LRI in order to comply with the NHS England Congenital Heart Disease Services Specification. If these standards are not met, Level 1 Congenital Heart Disease services will be decommissioned from UHL.</p> <p>This is the first phase in UHL's clinical reconfiguration strategy for paediatric services, which will deliver a dedicated Children's Hospital in the Kensington Building at the Leicester Royal Infirmary.</p>	<p>2.3.8 2.3.2</p>

<b>What are the key assumptions in this business case?</b>	<p>The EMCHC project full business case (FBC) to move the paediatric congenital heart service from Glenfield Hospital to the Leicester Royal Infirmary (LRI) outlines the functional space, equipment and workforce required to meet the requirements, specifically that for the colocation of services, of the NHS England Paediatric Congenital Heart Disease Specification (2016) and Paediatric Congenital Heart Disease Standards: Level 1 for Specialist Children’s Surgical Centres (2016).</p> <p>In addition the FBC provides for sufficient future capacity to deliver the activity requirements of NHS England which will be agreed on an annual basis as part of the usual contracting process.</p> <p>The majority of additional revenue costs are incurred on an ongoing basis owing to the split of adult and paediatric congenital heart services and the additional requirements of the NHSE standards, although there are potential efficiencies when the rest of paediatric services move to the Kensington Building as a part of the wider Reconfiguration Programme.</p>	<p>2.3.8 2.3.11 5.2.3 5.2.4</p>
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What are the Benefits?		How will it be measured?	Business Case Reference
<b>To the patient</b>	To protect the future of the East Midlands Congenital Heart Centre, meaning that Congenital Heart Disease (CHD) patients living in the region can continue to have surgery close to home	Compliance with NHS England CHD standards, therefore ensuring ongoing commissioning of the service	2.2.1 2.3.8
	To provide a solution that maximises clinical quality and safety, continuing excellent clinical outcomes supported by the protection of existing processes	Maintain current excellent outcomes within the National Congenital Heart Disease Audit  Reduced DATIX incidents associated with this group of patients, relating to serious harm	2.2.1 2.5
	To provide a quality environment resulting in an optimum patient experience	Clinically delivered design to ensure appropriate patient environment  Improved privacy and dignity  Improved infection prevention.  PLACE assessment	2.2.1 7.3.1 7.3.2 7.5
	To provide same site located children’s heart and wider paediatric and neonatal services, to negate cross site transfers, and the confusion and stress that this causes to patients and their families.	Transfer of the children’s congenital heart service to the LRI	2.2.1 4.2.1



What are the Benefits?		How will it be measured?	Business Case Reference
<b>To UHL</b>	To protect the future of the East Midlands Congenital Heart Centre, ensuring that UHL retain this high profile service and the financial income associated with it	Compliance with NHS England CHD standards, therefore ensuring ongoing commissioning of the service	2.2.1 2.3.8
	To deliver a solution that ensures accessibility to services and maximises clinical adjacencies.	Delivers essential clinical adjacency	2.2.1 7.3.1
	Alignment with the long term clinical reconfiguration strategy for all children's services to be located in a dedicated building on the LRI site, which is consistent with the UHL Development Control Plan (DCP)	Transfer of the children's congenital heart service to the LRI, followed by the transfer of all paediatric services into the Kensington Building through the wider reconfiguration programme	2.2.1 2.3.2 2.5
	To deliver a solution that facilitates recruitment and enables the delivery of high levels of teaching and training, improving staff morale	Reduced staff turnover Reduced vacancy factors Reduced premium expenditure	2.2.1 2.5 7.7
<b>To LLR</b>	The next step in the delivery of the reconfiguration programme as part of the Sustainability Transformation Partnership (STP)	Timeline and sequencing of the STP	2.2.1 2.3.2
	Maintains the national profile of quaternary paediatric services in LLR	Project completion securing the future of the CHD service	2.2.1 2.3.7

		<b>Business Case Reference</b>
<b>What is the solution?</b>	<p>There are four elements of the project all of which are located in the Kensington Building at the LRI, as follows:</p> <ul style="list-style-type: none"> <li>• Theatre and Cath Lab Department – new build extension at Level 1</li> <li>• 12 bed Paediatric Intensive Care Unit (PICU) – refurbishment of existing administration and transport service space on Level 5</li> <li>• 17 bed Paediatric Cardiac Ward – refurbishment of existing Gynaecology Assessment Unit (GAU) on Level 1</li> <li>• Paediatric Cardiac Outpatient Department – refurbishment of existing Gynaecology Outpatient Department on Level 0</li> </ul> <p>In addition to the above, there are a number of support spaces/projects including EMCHC offices; a Multi-Disciplinary Team (MDT) meeting room; enabling ventilation works (arising from blocking up windows adjacent to the new build); theatres/cath lab changing room; reducing the gradient of the Jarvis access tunnel and Parents/Carers accommodation. All are funded through this FBC.</p> <p>All areas are vacated through separately funded projects (outside of the scope of this business case) to move Gynaecology services and administration and transport services out of the Kensington Building.</p>	7.3.1
<b>What options have been considered?</b>	<p>A full options appraisal was carried out through the development of the business case.</p> <p>The Do Nothing (Business As Usual) option assumes that Level 1 Congenital Heart Disease services are decommissioned from UHL due to non-compliance with NHS England standards. This assesses the impact of UHL losing the income associated with all CHD and associated activity, including Paediatric Cardiac Surgery and Interventional Catheterisation, Paediatric Critical Care and Extra Corporeal Membrane Oxygenation (ECMO) associated with Paediatric Cardiac Surgery, Inpatient spells and Outpatient and Diagnostic procedures.</p> <p>The other two options shortlisted were the transfer of the service to the Kensington Building and the Balmoral Building. The Kensington Building was identified as the preferred option through both the non-financial and the financial appraisals.</p>	Economic Case Section 3
<b>Are there any material deviations to recommended standards?</b>	<p>Three of the main clinical areas of the project involve the refurbishment of retained estate, therefore compliance with national recommendations e.g. Health Building Notes (HBN's) and Health Technical Memorandum (HTM's) is very difficult to achieve (and in some areas impossible), leading to derogations.</p> <p>The design brief for the new build theatre/cath lab department was to have a fully compliant design, but certain items have been modified through the design process with all relevant stakeholders.</p> <p>All derogations are signed off by the appropriate clinical leads, the Trust's lead infection prevention consultant and estates leads, and approved by the Children's Hospital Project Board.</p> <p>A full list of derogations from HBNs and HTMs is appended to the</p>	7.3.1 Appendix 17 2.3.8

	<p>FBC.</p> <p>The project delivers the space and workforce plan to fully comply with the NHS England Congenital Heart Disease standards.</p>	
<p><b>How will it be implemented?</b></p>	<p><b><u>Facilities</u></b></p> <p><b>Theatre/cath lab department</b> – this will be achieved by a new build at first floor level, adjacent to theatres 17 and 18 (maternity) which futureproofs the space as this floor will become the paediatric theatre department when the rest of paediatrics moves into the Kensington Building as a part of wider Reconfiguration. The construction method is an off-site produced, steel-framed solution that comprises a concrete floor and a high standard of internal finishes, representative of a traditional construction method.</p> <p><b>Paediatric Intensive Care Unit (PICU)</b> – this will be achieved through the refurbishment of existing administration space on level 5 of the Kensington Building. The current occupants of this space will be moved, primarily to the Jarvis Building into space vacated by Recruitment (Human Resources) who are moving to off-site accommodation. The four neonatal parents bedrooms that are currently on this floor are remaining in their existing location.</p> <p><b>Paediatric Cardiac Ward</b> – this will be achieved through the refurbishment of ward 1 - the existing Gynaecology Assessment Unit (GAU) on level 1 of the Kensington Building. The GAU is moving to ward 8 in the Balmoral Building, into space that is being vacated by the ICU and associated services project. This solution gives the cardiac ward excellent clinical adjacencies, minimising the distance to the cath lab for pre and post interventional cardiology procedures.</p> <p><b>Paediatric Cardiac Outpatient Department</b> – this will be achieved through a combination of the refurbishment of the existing Gynaecology Outpatient and Colposcopy and Hysteroscopy Department and a new build extension on level 0 of the Kensington Building. Gynaecology Outpatient services are moving to Jarvis (into space vacated by the Early Pregnancy Assessment Unit which is moving to ward 8 Balmoral with the GAU) and to the Leicester General Hospital for co-location with the Colposcopy and Hysteroscopy service.</p> <p><b><u>Workforce and Transitional Plans</u></b></p> <p>The robust workforce plan has been clinically developed, and has been through a Star Chamber process to ensure that it is efficient and provides value for money, whilst ensuring that the CHD and other standards are met. Adequate time has been allowed for recruitment and training within this plan.</p> <p>The transitional plan will be developed with the clinical and operational teams, to ensure a smooth move of the service.</p>	<p>7.3.1</p> <p>4.2.1</p> <p>4.6.1</p> <p>7.7</p>

<p><b>Are there any key dependencies?</b></p>	<p><b>Internal to UHL:</b> The completion of the refurbishment of wards 15 and 16 at the LRI as a part of the ICU and dependent services project is required in order for the Surgical Assessment Unit (SAU) to move out of ward 8. This releases the space for the GAU to move out of ward 1 to allow its refurbishment as a paediatric cardiac ward and the Early Pregnancy Assessment Unit (EPAU) to move out of the Jarvis Building.</p> <p>The refurbishment of the current EPAU on L0 Jarvis is required in order for the Gynaecology Outpatient Department to move out of L0 Kensington, which vacates this space to be refurbished for the Paediatric Cardiac Outpatient Department.</p> <p>These moves are detailed in a diagram in section 2.3.2 of the FBC.</p> <p>This interdependency is being managed by the Gynaecology and ICU projects and being monitored through the Reconfiguration Programme Board.</p>	<p>2.3.2</p> <p>2.6.2</p> <p>6.2.3</p>
	<p><b>Internal to UHL:</b> The project is dependent on moving admin and transport teams out of Level 5 of the Kensington Building, into space identified within the Jarvis Building (vacated by Recruitment services who are moving to an offsite premises). The project is being managed by the Children’s Hospital Project Manager and being monitored through the Children’s Hospital Project Board.</p>	<p>2.6.2</p> <p>6.2.3</p>
	<p><b>Internal to UHL:</b> The completion of the infrastructure required to support the cardiac accommodation is to be provided through a wider Infrastructure project.</p> <p>The project is being managed by an Estates Project Manager and being monitored through the Children’s Hospital Project Board.</p>	<p>2.6.2</p> <p>6.2.3</p>
	<p><b>External to UHL:</b> Planning Permission is required for the new build theatre/cath lab and outpatient extension. There has been ongoing dialogue with the planning department to reduce risks of delays to approval. The planning application was submitted on 11<sup>th</sup> July 2019, allowing time for the Trust and Contractor to work through and discharge any pre-commencement conditions prior to works beginning in early 2020.</p>	<p>2.6.2</p> <p>4.9.16</p>
<p><b>When will it be completed?</b></p>	<ul style="list-style-type: none"> <li>• FBC approval at Trust Board: September 2019</li> <li>• Commencement of Gynaecology Project (interdependency): September 2019</li> <li>• Planning permission received: November 2019</li> <li>• Commencement of new build construction: January 2020</li> <li>• Commencement of refurbished construction: April 2020</li> <li>• Completion of new build construction: November 2020</li> <li>• Completion of refurbished construction: November 2020</li> <li>• Operational commissioning: November – December 2020</li> <li>• Transfer of service and go live: December 2020</li> </ul>	<p>4.6.1</p> <p>6.2.1</p> <p>6.2.3</p> <p>Appendix 24</p>
<p><b>How much will it cost?</b></p>	<p>The total capital cost of project is £14.174m. This is broken down as follows:</p> <ul style="list-style-type: none"> <li>• Works costs (New build outpatient extension and theatre and cath lab department; Refurbished Paediatric Cardiac ward; Refurbished Paediatric Intensive Care Unit; Refurbished</li> </ul>	<p>5.2.1</p> <p>Appendix 22</p>

	<p>Paediatric Cardiac outpatient department; Support spaces) £7.320m</p> <ul style="list-style-type: none"> <li>• Fees £843k</li> <li>• Equipment and IT (including IT fees) £3.599m</li> <li>• Optimism bias and contingencies £596k</li> <li>• Inflation adjustments £105k</li> <li>• Non-reclaimable VAT £1.710m</li> </ul>	
<p><b>Will it be affordable?</b></p>	<p><b><u>Capital</u></b></p> <p>The total capital cost of this FBC is 14,174m, of which £7,874m is funded from capital identified within UHL's Capital Resources Limit (CRL), and up to £6.3m is from charitably funded sources.</p> <p>Leicester Hospitals Charity currently has £2.8m of charitable funds available to support this project, and aim to raise the total amount (£6.3m) through a dedicated fundraising campaign which had its public launch on 9<sup>th</sup> July 2019. The members of the Children's Hospital Appeal Campaign Board are confident that this additional fundraising is achievable.</p> <p>In the event that the fundraising falls short at the time when the Trust is setting the capital budget for 2020/21, this figure will be reserved against the Trust's CRL. As the charitable funds increase, this reserve will be released to support other capital expenditure in the Trust from a reserved items list.</p> <p>The way in which Trust's capital and charitable donations are treated from an accountancy perspective differ – for this reason, it must be noted that a shortfall of (for example) £1 million will have an adverse impact on the Trust's finances of circa £20k per annum.</p> <p><b><u>Revenue</u></b></p> <p>The scheme creates a cost pressure to the Trust when activity targets are achieved, relocation of the service has happened and NHS England standards are met of £329k per annum operation costs and £836k in total, albeit that some of the capital charges are allowed for in the Trust's planned position as the capital is funded from operational capital. The following table shows the impact of income and expenditure associated with the project:</p>	<p>5.2.1</p> <p>5.3.2</p> <p>5.2.4</p>

Total Impact on I&E	2019/20 £	2020/21 £	2021/22 £	2022/23 £
Contract Income	1,670	3,481	5,065	5,065
Charitable Income		6,300		
<b>Income</b>	<b>1,670</b>	<b>9,781</b>	<b>5,065</b>	<b>5,065</b>
<b>Operational Costs</b>				
Relocation	(340)	(1,942)	(2,470)	(2,470)
Standards	(628)	(1,158)	(1,158)	(1,158)
Additional Activity	(542)	(1,519)	(1,749)	(1,765)
<b>Total Additional Operational Costs</b>	<b>(1,509)</b>	<b>(4,619)</b>	<b>(5,378)</b>	<b>(5,394)</b>
<b>Impact on Operational Position</b>	<b>161</b>	<b>5,162</b>	<b>(313)</b>	<b>(329)</b>
Charitable income adjustment		(6,300)		
<b>Impact on Operational Position after Charitable income adjustment</b>	<b>161</b>	<b>(1,138)</b>	<b>(313)</b>	<b>(329)</b>
Capital Charges on treasury Funded assets	(36)	(247)	(525)	(507)
Capital charges on donated/ charitable funded assets	0	(70)	(281)	(281)
<b>Total Capital Charges</b>	<b>(36)</b>	<b>(317)</b>	<b>(806)</b>	<b>(788)</b>
<b>Impact on Trust I&amp;E (before revenue adjustment)</b>	<b>125</b>	<b>4,845</b>	<b>(1,118)</b>	<b>(1,116)</b>
Revenue adjustment for Charitable donations	0	(6,230)	281	281
<b>Impact on Trust Performance position</b>	<b>125</b>	<b>(1,385)</b>	<b>(838)</b>	<b>(836)</b>

The changes in costs are driven by 3 drivers:

1. The requirement to achieve minimum staffing levels as outlined within the NHS England Congenital Heart Disease standards;
2. Additional activity targets stated by NHS England; and
3. The cost of providing the service at the LRI site including capital charges and facilities and equipment costs.

These are broken down as follows:

Total Impact on I&E	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000
Relocation Capital Related	(36)	(481)	(1,317)	(1,299)
Relocation workforce	(339)	(1,679)	(1,679)	(1,679)
Standards	(628)	(1,158)	(1,158)	(1,158)
Additional Activity	1,129	1,962	3,316	3,300
<b>Total</b>	<b>125</b>	<b>(1,355)</b>	<b>(838)</b>	<b>(836)</b>
<b>Non Recurrent Costs</b>		<b>(30)</b>		
<b>Total I&amp;E Impact</b>	<b>125</b>	<b>(1,385)</b>	<b>(838)</b>	<b>(836)</b>

The table shows that the additional activity assumed would generate enough income to cover the costs of relocation. However, in order to maintain the EMCHC service, the Trust has to deliver minimum standards even if it did not relocate, providing a cost pressure to the Trust.

This must be seen in the context that the service currently provides a positive contribution to the Trust's financial position of circa £8m per annum, which will reduce by £836k when the paediatric services moves to the LRI. The cost pressure to the Trust of losing the EMCHC activity is significantly greater compared to the reduction in surplus. The movement in I&E for the service is illustrated below:

EMCHC Income and Expenditure Position (including overheads)	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000
Income	30,276	31,946	33,757	35,341	35,341
Expenditure	(22,368)	(23,913)	(27,234)	(28,270)	(28,268)
<b>Surplus</b>	<b>7,908</b>	<b>8,033</b>	<b>6,523</b>	<b>7,070</b>	<b>7,072</b>

<p><b>How will the project contribute to deficit reduction?</b></p>	<p>As detailed above, this project does add £836k to the Trust deficit, however the cost pressure to the Trust of losing the income from EMCHC activity is significantly greater compared to the reduction in surplus.</p> <p>This forms the first step in creating a new children’s hospital which is a key component of the Reconfiguration Programme. Once the programme is complete, this will contribute towards the elimination of the £24.5m structural deficit.</p>	<p>5.2.4</p>
<p><b>How have patients been involved?</b></p>	<p>From inception of the project there has been consistent attendance at the Children’s Hospital Project Board by a patient representative, who has also been in attendance at clinical design engagement meetings to ensure that the voice of the patient is at the forefront of our plans.</p> <p>The patient representative has been actively engaging with service users to gain their views and input into the project, as well as developing a schools engagement programme, in which she went into local schools to ask pupils for their input into the patient environment and their experiences in hospitals, in order to shape our plans.</p>	<p>2.4.1 7.4.2 Appendix 4</p>
<p><b>What external assurance has been obtained?</b></p>	<p>There is representation from both local and specialised commissioning on the Children’s Hospital Project Board, both of which have been key to the development of this business case.</p> <p>A critical friend review of the project was undertaken in June 2019 to provide assurance and delivery guidance. The review team were satisfied that the project is well managed with respected and capable leadership. They found confidence in members of the project team that the already excellent service would not be compromised and higher standards will be met for an increased number of patients. The review team were also pleased that the finances had been properly stress tested for the business case. The review team made a series of recommendations which are being developed into an action plan to be progressed.</p>	<p>6.4.1 2.4.3 6.2.5</p>



Risks	Mitigations	RAG	Post mitigation RAG	Business Case Reference	
<b>Business case and project delivery</b>	There is a risk of slippage in timescales for delivery of the EMCHC project due to the delay in the availability of internal capital as a result of competing pressures on Trust CRL.	Ongoing engagement with the Director of Operational Finance and continued project exposure at Capital Monitoring Investment Committee (CMIC); use of charitable funding to supplement CRL; Ongoing engagement with NHS England regarding progression against programme and escalation of any risk of delay.	12	6	2.6 Appendix 7
<b>Clinical</b>	There is a risk that the quality of the project is compromised due to the challenging capital budget.	Budget management; management of expectations; clinical engagement throughout the design development process.	12	6	2.6 Appendix 7
<b>Estates</b>	There is a risk that the interdependencies between reconfiguration projects (ICU project, Gynaecology project, Level 5 Kensington moves, Infrastructure project) impact on the programme for the EMCHC project and availability of space to allow decant.	Master programme developed showing the critical path dependencies; continued engagement with the UHL property team and Reconfiguration Programme Board; Escalation of issues to Project Boards and Reconfiguration Programme Board.	12	4	2.6 Appendix 7
	There is a risk of scope creep due to change in clinical personnel, change in clinical requirements, undefined brief or progression of clinical engagement.	Sign off of plans, c-sheets and schedule of equipment by clinical leads; any changes subject to Project Board approval and supported by change control governance to identify financial, operation or time impact; use of contingency if appropriate.	12	4	2.6 Appendix 7



Risks	Mitigations	RAG	Post mitigation RAG	Business Case Reference
<p>There is a risk that despite the development of a construction delivery plan, there will be delays due to the close proximity of the construction work to a live clinical environment.</p>	<p>Use of Government Soft Landings methodology to develop the construction programme; escalation policy for stoppages; allowance for float within the programme; communications plan; close engagement with clinical and management leads of affected areas.</p>	12	4	2.6 Appendix 7
<p>There is a risk that there is inadequate contingency allowed for within the project cost plan – the allowance for contingency against the costed risk register has been set low in order to ensure that the business case meets the capital budget.</p>	<p>Strong change control management by Estates and Reconfiguration project managers and Children’s Hospital Project Board.</p>	12	8	2.6 Appendix 7
<p><b>Workforce</b></p>	<p>There is a risk that the Trust may fail to acquire appropriately skilled staff to work in the new facility due to lack of qualified staff in the market.</p>	12	6	2.6 Appendix 7

Risks		Mitigations	RAG	Post mitigation RAG	Business Case Reference
Equipment	There is a risk of scope creep in items of agreed equipment due to change of clinical personnel, change of clinical requirements, undefined brief or progression of clinical engagement.	Sign off of c-sheets and schedule of equipment by clinical leads; any changes subject to Project Board approval and supported by change control governance to identify financial, operation or time impact; use of contingency if appropriate.	12	2	2.6 Appendix 7
IT	There is a risk that the IT requirements for the project are not affordable within the project budget due to challenging capital budget.	Contingency within the cost plan; continued value engineering of the solution; fully worked up IT plan.	12	8	2.6 Appendix 7
Reconfiguration	There is a risk that inadequate space for offices (EMCHC and Level 5 Kensington) is found in close enough proximity to the clinical areas due to a lack of space at the LRI, resulting in delay to the EMCHC project.	Management through the Development Control Plan (DCP) team, Project Boards and Reconfiguration Programme Board; Close working with the CMG management teams to manage expectations; exploring alternative opportunities for the delivery of space.	15	3	2.6 Appendix 7



# East Midlands Congenital Heart Centre

Children's Heart Hospital Relocation

Part of Leicester Hospitals Charity Children's Appeal Reg: 1056804

## Full Business Case

Children's Hospital Project  
Phase I (EMCHC Co-location)  
August 2019

Version 1.13

Issue date 30<sup>th</sup> August 2019

*Building Caring at its best*

# Document Quality Management

**Title** Children's Hospital Project Phase I (EMCHC Co-location)

**Date** 30<sup>th</sup> August 2019

**Prepared by** Alexandra Morrell, Senior Project Manager, UHL

**Checked by** Nicky Topham, Reconfiguration Programme Director, UHL

**Authorised by** Children's Hospital Project Board

## Document History

Version	Date Issued	Brief Summary of Change	Author
1.0	10/05/19	First draft: population of the Strategic Case; Management Case and Clinical Quality Case	AM, RA
1.1	28/06/19	Updated following review of Strategic and Management Case by Nicky Topham	NT, AM
1.2	01/07/19	Updated following review by Frances Bu'Lock	FAB, AM
1.3	01/07/19	Inclusion of Economic and Financial Cases	TP
1.4	04/07/19	Update of Economic and Financial Cases	TP
1.5	05/07/19	Updated following review by Aidan Bolger	AB, AM
1.6	05/07/19	Inclusion of Commercial Case	GC
1.7	05/07/19	Formatting and completion of the Executive Summary	AM
1.8	10/07/19	Updated following review by Nicky Topham	NT, AM
1.9	22/07/19	Update of Financial Case following review by Chris Benham; Update of Executive Summary following review by Nicky Topham	TP, NT, AM
1.10	30/07/19	Update of Financial and Economic Cases following change to funding strategy	TP, AM
1.11	07/08/19	Update to Financial Case following Project Board review, addition of CGI images Children's Hospital Project Board approved FBC	TP, AM
1.12	14/08/19	Update following review by Frances Bu'Lock; Update following presentation of business case to Executive Quality and Performance Board	FAB, AM
1.13	30/08/19	Update following presentation of business case to Finance and Investment Committee	AM

# Glossary of Terms

Abbreviation	Full Heading
ACHD	Adult Congenital Heart Disease
ACU	Assisted Conception Unit
ADB	Activity DataBase (DH standards and guidance – <a href="http://www.gov.uk">www.gov.uk</a> )
ALOS	Average length of stay
AP	Authorised Person
BAU	Business As Usual
BCT	Better Care Together
BIM	Building Information Modelling
BMA	British Medical Association
BRE	Building Research Establishment
BREEAM	Building Research Established Environment Assessment
CCG	Clinical Commissioning Group
CDM	Construction, Design Management
CHD	Congenital Heart Disease
CHUGGS	Cancer, Haematology, Urology, Gastro and General Surgery
CICU	Children's Intensive Care Unit
CIP	Cost Improvement Programme
CMG	Clinical Management Group
COD	Central Operating Department
CoMET	Children's Medical Emergency Transport
CQC	Care Quality Commission
CRL	Capital Resources Limit
CSI	Clinical Support and Imaging

Abbreviation	Full Heading
CT	Computerised Tomography
CYCLe	County Youth Council Leicestershire
DCP	Development Control Plan
DH	Department of Health
DQI	Design Quality Indicator
ECC	Engineering and Construction Contract
ECMO	Extra Corporeal Membrane Oxygenation
ED	Emergency Department
EF	Emergency Floor
EMAS	East Midlands Ambulance Service
EMCHC	East Midlands Congenital Heart Centre
EPAU	Early Pregnancy Assessment Unit
ESB	Executive Strategy Board
ESM	Emergency and Specialist Medicine
F&E	Furniture and Equipment
FBC	Full Business Case
FIC	Finance Investment Committee
FM	Facilities Management
FYE	Fiscal Year End
GAU	Gynaecology Assessment Unit
GH	Glenfield Hospital
GMP	Guaranteed Maximum Price
GPR	Ground Penetrating Radar
GSL	Government Soft Landings
GSU	Gynaecology Services Unit

Abbreviation	Full Heading
H&S	Health & Safety
HBN	Health Building Note (DH standards and guidance – <a href="http://www.gov.uk">www.gov.uk</a> )
HDU	High Dependency Unit
HPB	Hepato Pancreato Biliary
HTM	Health Technical Memorandum (DH standards and guidance – <a href="http://www.gov.uk">www.gov.uk</a> )
I&E	Income & Expenditure
IBP	Integrated Business Plan
ICU	Intensive Care Unit
IM&T	Information Management & Technology
IP	Infection Prevention
ITAPS	Intensive Care, Theatres, Anaesthetics, Pain and Sleep
JCT	Joint Contracts Tribunal
KPI	Key Performance Indicator
LGH	Leicester General Hospital
LLR	Leicester, Leicestershire & Rutland
LOS	Length of Stay
LPT	Leicestershire Partnership Trust
LRI	Leicester Royal Infirmary
MAU	Maternity Assessment Unit
MDT	Multi-Disciplinary Team
MES	Managed Equipment Service
MRI	Magnetic Resonance Imaging
MSS	Musculoskeletal and Specialist Surgery
NEC	New Engineering Contract
NICE	National Institute for Health and Care Excellence



Abbreviation	Full Heading
<b>NPC</b>	Net Present Cost
<b>NPSV</b>	Net Present Social Value
<b>NPV</b>	Net Present Value
<b>NQB</b>	National Quality Board
<b>NSF</b>	National Service Framework
<b>OH&amp;P</b>	Overheads and Profit
<b>OBC</b>	Outline Business Case
<b>OD</b>	Organisational Development
<b>ODP</b>	Operating Department Practitioner
<b>OOH</b>	Out Of Hours
<b>OPD</b>	Out Patient Department
<b>OSC</b>	Overview and Scrutiny Committee
<b>PC</b>	Provisional Cost
<b>PDC</b>	Public Dividend Capital
<b>PER</b>	Project Evaluation Reviews
<b>PICU</b>	Paediatric Intensive Care Unit
<b>PID</b>	Project Initiation Document
<b>PIR</b>	Post-Implementation Review
<b>PLACE</b>	Patient-Led Assessment of the Care Environment
<b>PMO</b>	Project Management Office
<b>POE</b>	Post Occupancy Evaluation
<b>PPE</b>	Post Project Evaluation
<b>PPI</b>	Patient and Public Involvement
<b>PUBSEC</b>	Public Sector Price and Cost Indices
<b>RAG</b>	Red-Amber-Green

Abbreviation	Full Heading
RCM	Royal College of Midwives
RCN	Royal College of Nursing
RIBA	Royal Institute of British Architects
RLB	Rider Levett Bucknell – Trust Cost Advisors
RPA	Risk Potential Assessment
RRCV	Renal, Respiratory, Cardio and Vascular
SaLT	Speech and Language Therapy
SAU	Surgical Assessment Unit
SHO	Senior House Officer
SMART	Specific, Measureable, Attainable, Relevant, Timely
SME	Small and Medium-sized Enterprise
SOP	Standard Operating Procedure
SRO	Senior Responsible Officer
STP	Sustainability and Transformation Partnership
TOE	Transoesophageal Echocardiogram
ToR	Terms of Reference
UHL	University Hospitals of Leicester
VfM	Value for Money
VIE	Vacuum Insulated Evaporator
W&C	Women's and Children's

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## Structure & Content of the Document

This combined Outline Business Case (OBC) and Full Business Case (FBC) has been prepared using the agreed standards and format for business cases, as set out in Department of Health (DH) guidance and HM Treasury Green Book. The six case model comprises the following key components:

- ▶ **The Strategic Case** | This sets out the strategic context and the case for change, together with the supporting investment objectives for the scheme
- ▶ **The Economic Case** | This demonstrates that the organisation has selected the choice for investment which best meets the existing and future needs of the service and optimises value for money (VFM)
- ▶ **The Commercial Case** | This outlines the content and structure of the proposed commercial procurement method
- ▶ **The Financial Case** | This confirms funding arrangements and affordability and explains any impact on the balance sheet of the organisation
- ▶ **The Management Case** | This demonstrates that the scheme is achievable and can be delivered successfully to cost, time and quality
- ▶ **The Clinical Quality Case** | This demonstrates that the organisation has considered the investment from a clinical quality, workforce, patient safety and patient experience perspective, and has engaged with key stakeholders for the benefit of patients, the public and the wider health community

This combined OBC and FBC requires approval from the UHL Trust Board in order to proceed. Each case has been written so that it makes sense in isolation from the rest of the business case, therefore there is some duplication of information throughout the case.

# 1 | Executive Summary

## 1.1 Introduction

The nationally renowned East Midlands Congenital Heart Centre (EMCHC) is co-located at the Glenfield Hospital (GH) with the adult Cardiology and Cardiac Surgery department in purpose-built facilities that cater for patients with congenital heart disease from before birth, in childhood and through adulthood.

The EMCHC is a Level 1 Congenital Heart Disease (CHD) Centre, commissioned by NHS England. Some cardiac outpatient and non-specialist cardiology services are locally commissioned by Clinical Commissioning Groups (CCGs). It is a quaternary centre, staffed by a highly skilled multi-disciplinary team, providing highly specialised care for people with CHD from across the East Midlands region as well as further afield.

The EMCHC service currently contributes circa £8 million benefit to the Trust's Income and Expenditure position per year.

The effectiveness of the service was rated as Outstanding by the Care Quality Commission (CQC) when it was last inspected in January 2017, the only service to achieve this rating at the Glenfield Hospital.

In 2014, the New Cardiac Review was published by NHS England, which included a set of national standards to which all Level 1 CHD Centres must comply. Amongst other stipulations, these include the requirement for each centre to:

- Employ at least four congenital cardiac surgeons by 2021;
- Ensure that each cardiac surgeon carries out a minimum of 125 operations per year, averaged over three years;
- Ensure that paediatric cardiac services are co-located with other paediatric services by April 2019 (this date has since been revised to December 2020, with agreement from NHS England).

In order to meet these standards and the associated increased activity for the children's congenital heart service, there needs to be more physical space, greater operational capacity and the service needs to be re-located to the Leicester Royal Infirmary (LRI) to sit alongside the other paediatric services.

This combined Outline Business Case (OBC) and Full Business Case (FBC) describes the drivers for change that underpin the move of the EMCHC service from the GH to the LRI. It identifies the capital and revenue required in order to support the relocation of the paediatric element of the EMCHC from the GH to the LRI, whilst developing the model of care for the Adult Congenital Heart Disease (ACHD) service, which will remain at the GH.

The scheme is a key enabler for the Intensive Care and associated services project (separately funded business case), as it vacates the theatre capacity at the GH required for the Hepato Pancreato Biliary (HPB) and Renal Transplant services to move from the Leicester General Hospital (LGH) to the GH.



Based on current assumptions, the paediatric CHD service will move to the LRI in December 2020, aligning with the deadline for co-location agreed with NHS England (the project programme can be found in appendix 24).

## 1.2 Strategic Case

### 1.2.1 Project Objectives

The objectives of the project are outlined in full within the Project Initiation Document (PID) (see appendix 1) and Clinical Operational Policy (see appendix 2). They include:

- ▶ To protect the long-term future of the EMCHC by co-locating children's cardiac services with all other children's services to meet national standards and requirements; integrating the service with the wider children's hospital to improve patient experience, increase efficiency and ensure that specialist opinion is on-hand for patients with multiple co-morbidities through the delivery of the required clinical adjacencies;
- ▶ To provide safe, high quality care for children and their families in age-appropriate facilities through new models of care, which reflect best practice and improve outcomes and experience.

The following SMART (Specific, Measureable, Attainable, Relevant, Timely) objectives arise from these qualitative objectives:

- ▶ The project will deliver the spatial capacity and associated equipment for the children's congenital heart service to move to the LRI by December 2020. This will align with the models of care and operational strategy that has been developed with the clinical team;
- ▶ The project will deliver the workforce plan and associated recruitment strategy to align with the requirements arising from increased activity, and the move of the service to the LRI site (thus splitting it from the ACHD service);
- ▶ The solution for the project will align with the wider Reconfiguration Programme, and will support the Trust's clinical strategy by being the first phase to develop a Children's Hospital in a dedicated building on the LRI site.

### 1.2.2 Alignment with LLR Sustainability and Transformation Partnership (STP)

The Leicester, Leicestershire and Rutland (LLR) Sustainability and Transformation Partnership (STP) sets out the actions that are needed across the health and care system over the next five years in order to improve health outcomes for patients and ensure our services are safe and high quality within the financial resources available. The STP identifies the essential need for University Hospitals of Leicester (UHL) to consolidate acute services onto two sites (LRI and GH) to deliver its clinical reconfiguration strategy, whilst retaining a number of services at LGH.

The UHL Reconfiguration Programme is identified as the LLR STP's top priority for capital expenditure; and whilst we have received positive feedback from NHS Improvement regarding our wave 4 bid for capital funding (submitted in 2018), it is clear that capital will not be available in this financial year.

This Full Business Case (FBC) supports the Trust's long-term plan to bring together all paediatric and maternity services onto the LRI site, as described within the Trust's Clinical Reconfiguration Strategy, and reflected in the UHL Development Control Plan (DCP).

This FBC relates to the following schemes which align with the Trust's Clinical Reconfiguration Strategy:

- ▶ The transfer of the paediatric element of the EMCHC from the GH to the LRI site forms the first phase of the Children's Hospital Project. The second phase of this will consolidate all other paediatric services into a dedicated Children's Hospital in the Kensington Building. The capital funding for phase II is identified within the reconfiguration capital requirement.
- ▶ Creating the theatre capacity for the move of the Level 3 Intensive Care and associated services off the LGH to the GH; as well creating the ward capacity to move the Renal service to the GH following the move of the Transplant service.



*Figure 1 Architect Impression of the Children's Hospital following Phase II*

The space required for the congenital heart service to move to the LRI is released by the move of the Gynaecology Assessment Unit (GAU) and Early Pregnancy Assessment Unit (EPAU) to Ward 8 of the Balmoral Building, LRI. This has been approved as a separate business case since it aligns with the long-term vision for all Gynaecology services to move in to the Balmoral Building to co-locate with other surgical specialties. The capital funding to move the rest of Gynaecology to the LRI (co-located with Ward 8) is identified within the wider Reconfiguration capital bid.

The following diagram explains this series of ward moves and interdependencies:

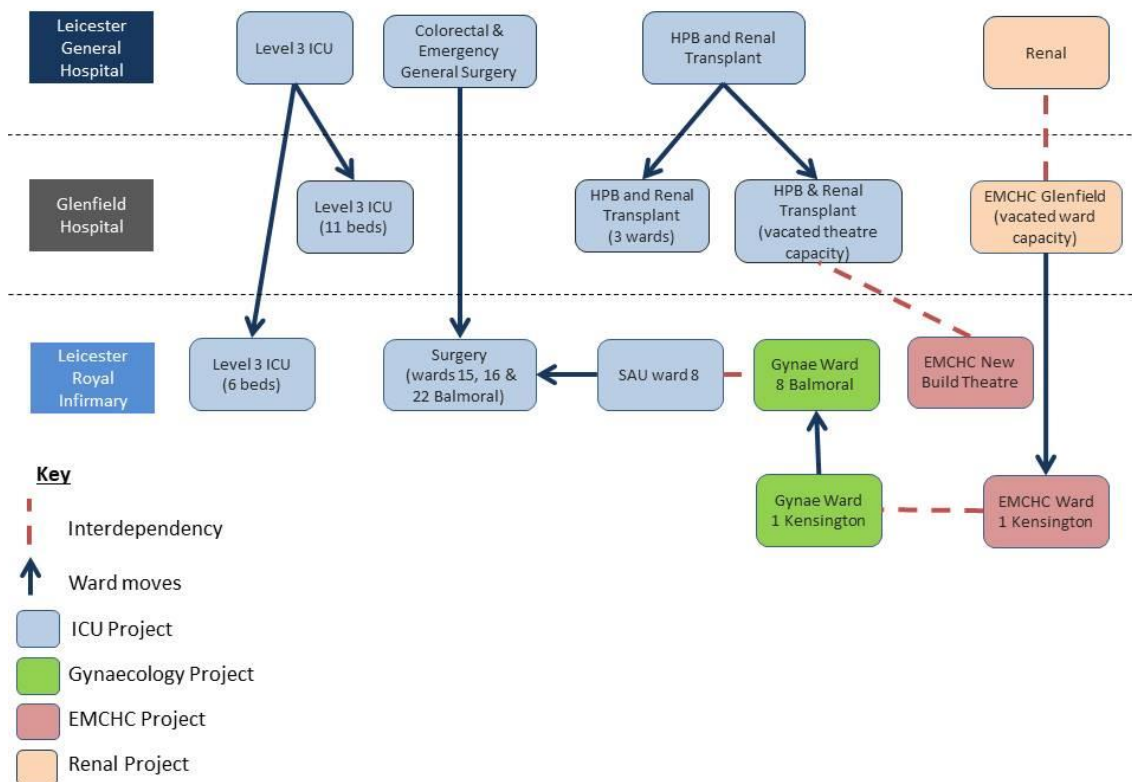


Figure 2 Interrelationship between the EMCHC project and the ICU and associated services project

### 1.2.3 Activity and Capacity Planning Assumptions

The following NHS England Congenital Heart Disease standards identify the minimum levels of activity that the EMCHC service needs to achieve:

- ▶ Standard B9 (L1): Consultant congenital surgery cover must be provided by consultant congenital surgeons providing 24/7 emergency cover. Rotas must be no more frequent than 1 in 4.
- ▶ Standard B10 (L1): Congenital cardiac surgeons must work in teams of at least 4 surgeons, each of whom must be the primary operator in a minimum of 125 congenital heart operations per year (in adults and/or paediatrics), averaged over a three year period.

This gives a minimum requirement of 500 congenital surgical cases per annum, which according to past activity translates to approximately 400 paediatric cases and 100 adult cases. The deadline for meeting both standards listed above is 2021.

NHS England have stated that UHL must achieve the following activity trajectories in order for commissioning to continue without intervention:

Milestone - (No Later Than)	Deliverable	Commissioner action if not delivered
01/04/2018 (2017/18)	Surgical activity at least 375	Surgical activity less than 356
01/04/2019 (2018/19)	Surgical activity at least 403	Surgical activity less than 382
01/04/2020 (2019/20)	Surgical activity at least 435	Surgical activity less than 418
01/04/2021 (2020/21)	Surgical activity at least 471	Surgical activity less than 453
01/04/2022 (2021/22)	Surgical activity at least 500	Surgical activity less than 487

*Table 1 NHS England Congenital Heart Disease trajectory*

With agreement from the Women's and Children's (W&C) Clinical Management Group (CMG) leads, capacity plans are based on the trajectory stated within the right-hand column of the table above (commissioner action if not delivered). These were felt to be realistic figures to work to, whilst limiting financial exposure if the 'deliverable' targets were assumed but not reached.

## 1.2.4 Evidence of the Four Key Tests

The four key tests for service change are:

### Strong public and patient engagement

Stakeholder engagement is a vital part of the project in order to ensure that all needs are met through the delivery process. A patient representative sits on the Children's Hospital Project Board, working with the Project Manager to ensure Public and Patient Involvement (PPI) is integral to the project. The patient representative has engaged with patients and families currently using congenital heart disease services at the GH, asking them about the project and then using that feedback to influence the project as it progresses, as well as attending clinical design meetings, in order to ensure that the patient is at the forefront of our planning assumptions.

A full version of the project communications and engagement plan can be found in appendix 4, detailing all public and patient engagement that has been done to date, as well as that planned for the future.

### Consistency with current and prospective need for patient choice

Patient choice and experience has been at the heart of the planning process. If the project does not progress as planned, congenital heart services at UHL will be decommissioned by NHS England, leaving the East Midlands as the only region in the country without a Level 1 Congenital Heart Centre. This would greatly impact patients needing to use these services as they would have to travel much greater distances in order to access congenital heart services elsewhere. This concern was reflected in the high level of public support that the Trust received when campaigning to keep the service.



An Equality Impact / Due Regard Assessment has been completed for the project. This identifies that all reasonable adjustments in order to ensure equity have been made, and that there is confidence that the project and its implementation will be non-discriminatory, not damage equality of opportunity, and will support relations with the protected groups. A full copy of the Equality Impact/Due Regard Assessment is detailed in appendix 5.

### Support for proposals from clinical commissioners

The project has been established in order to meet the requirements for Congenital Heart Services arising from the NHS England Paediatric Cardiac Services Specification and Congenital Heart Disease standards, in particular Staffing and Skills, Facilities and Interdependencies.

The standards were set by the NHS England national team, and were publically consulted on as a part of this. Regional specialised commissioners have confirmed support for this project to align with these standards.

### Clear Clinical Evidence Base

The NHS England Congenital Heart Disease standards were developed following a national review of the model of care for patients with congenital heart disease. They were the final outcome of several previous reviews of these services, the first of which was triggered following the tragic failures of children's heart surgery in Bristol in the 1980's. One of the key metrics resulting from this work is the number of surgical procedures a congenital heart surgeon carries out per year, set to ensure that their skills are at the level required for such highly complex procedures.

The requirement to be located on the same hospital site as wider paediatric services allows consultants from interdependent specialties to provide emergency bedside care in a timely manner.

## 1.2.5 Benefits Realisation

Work has been undertaken by the Trust to identify and quantify the clinical benefits resulting from this project. These include:

- ▶ **Strategic Fit:** in keeping with the longer term site reconfiguration proposals, acting as an enabler to other service moves and relocation supporting the longer term vision for all children's services to be located in a dedicated building on the LRI site.
- ▶ **Clinical Quality and Patient Safety:** swift access to paediatric consultants from other specialties, immediate diagnostic support and the visibility of patients will enhance patient safety and improve quality of care.
- ▶ **Patient Outcomes:** continued excellent clinical outcomes supported by the protection of existing processes - EMCHC has some of the best congenital heart disease surgery outcomes in the country.
- ▶ **Patient Experience:** responsive no-delays system in a dedicated bespoke environment will improve patient experience. The environment will reflect the needs of children and their families.

- ▶ **Clinical Staff & Resources:** improved patient flow, proximity of services and an environment tailored to meet demand will increase staff satisfaction, improve morale and help to mitigate stress, leading to higher rates of recruitment and retention as the future of the EMCHC is secured through delivery of the project.

The post-project evaluation and benefits realisation process is detailed within section 6.2.6 of this business case. A full version of the benefits realisation plan can be found in appendix 25.

## 1.2.6 Key Strategic Risks

Strategically, this project is a top priority for UHL. The service is high profile and the project is well supported politically and amongst the local and wider population. A Risk Potential Assessment (RPA) was completed and signed off by the Children's Hospital Project Board on 18<sup>th</sup> April 2019, which assessed this as a medium complexity project in terms of its strategic profile. A full version of the RPA is detailed in appendix 6 of this FBC.

## 1.2.7 Interdependencies

The EMCHC Co-location Project has the following dependencies and interdependencies:

- ▶ Interface with the UHL Development Control Plan (DCP);
- ▶ Alignment to the Better Care Together Programme/Sustainability Transformation Plan (STP);
- ▶ Essential enabler / interdependency with the ICU and associated services project to vacate theatre capacity and ward space at the GH. HPB and Transplant cannot move to the GH until the EMCHC service has moved to the LRI; subsequently, it allows the renal service to move into the vacated ward space;
- ▶ Interdependency with the ICU project, which will vacate ward 8 for the Gynaecology Assessment Unit, GAU, and Early Pregnancy Assessment Unit, EPAU, thereby vacating capacity in the Jarvis Building for Gynaecology outpatients;
- ▶ Dependency on Leicester City Council approving the planning application;
- ▶ Dependency on the infrastructure project to support the needs of the EMCHC, particularly the complex infrastructure and essential power required for the PICU and ECMO service;
- ▶ Identification of capital funding within the Trust's Capital Resources Limits (CRL), and that the capital is available at the time it is required.

## 1.3 Economic Case

### 1.3.1 Critical Success Factors

The SMART (Specific, Measurable, Attainable, Realistic, Timely) objectives are outlined in the Strategic Case and summarised in section 1.2.1 above.

## Weighted Benefit Criteria

A set of benefit criteria and weightings based on the critical success factors, vision and core principles of the project was signed off by the Children's Hospital Project Board and used to evaluate the options. Full details can be found in section 3.2.2.

### 1.3.2 Long List of Options

A long list of options was developed by the Reconfiguration Team. These are summarised in the table below:

Description	
<b>Option 1</b>	East Midlands Congenital Heart Centre on Knighton Street Campus (Knighton Street Outpatients and Offices) at the LRI – new build
<b>Option 2</b>	Kensington Option: East Midlands Congenital Heart Centre in Kensington Building at the LRI - new build and refurbishment
<b>Option 3</b>	Balmoral Option: East Midlands Congenital Heart Centre in Balmoral Building at the LRI – new build and refurbishment
<b>Option 4</b>	Children's Hospital (including East Midlands Congenital Heart Centre) at the Glenfield Hospital – new build and refurbishment
<b>Option 5</b>	Do Minimum: Space swaps between children's wards at the GH and the LRI in order to achieve the co-location standard – new build and refurbishment
<b>Option 6</b>	Do Nothing (Business As Usual, BAU): EMCHC remains at the Glenfield Hospital, the rest of the paediatric service remains at the LRI <b>Level 1 Congenital Heart Disease services are decommissioned from UHL</b>

Table 2 Long List of Options - summary

### 1.3.3 Long to Short List Options Appraisal

At a meeting on 20<sup>th</sup> August 2018, selected members of the Children's Hospital Project Team carried out the long to short list options appraisal, resulting in the identification of the following short list of options:

Short List of Options	
<b>2</b>	<b>Kensington option:</b> East Midlands Congenital Heart Centre in Kensington Building at the LRI - new build and refurbishment
<b>3</b>	<b>Balmoral Option:</b> East Midlands Congenital Heart Centre in Balmoral Building at the LRI – new build and refurbishment
<b>6</b>	<b>Do Nothing / Business As Usual (BAU):</b> EMCHC remains at the Glenfield Hospital, the rest of the paediatric service remains at the LRI <b>Level 1 Congenital Heart Disease services are decommissioned from UHL</b>

Table 3 Short List of Options

### 1.3.4 Non-Financial Options Appraisal

Options 2 & 3 were progressed to the Options Appraisal workshop, where the Children's Hospital Project Board discussed, appraised and critically scored each option against the weighted benefit criteria. The Do Nothing / Business As Usual option was kept as a comparator within the scoring process.

#### The Preferred Option (Non-Financial Appraisal)

The preferred option, as identified within the non-financial / qualitative appraisal is Option 2: the EMCHC in the Kensington Building.

### 1.3.5 Financial & Economic Appraisal

The shortlisted options have been subjected to a financial appraisal. The appraisal period is assumed to be over 62 years.

The 'Do Nothing' option assumes a reduction in the current income and a reduction of direct and indirect costs owing to the assumption that this results in the decommissioning of Level 1 Congenital Heart Disease services from UHL.

The inputs for the economic model are illustrated below:

<b>Economic Inputs</b>	<b>Do Nothing Option 6 £'000</b>	<b>Kensington Option 2 £'000 FYE</b>	<b>Balmooral Option 3 £'000 FYE</b>
<b>Capital Costs</b>		<b>12,463</b>	<b>14,697</b>
<b>Lifecycle over appraisal period</b>		<b>35,479</b>	<b>37,621</b>
<b>Changes in Revenue Costs 2023/24 (Reduction in Brackets) made up of:</b>	<b>6,753</b>	<b>5,437</b>	<b>5,437</b>
Additional annual costs – Activity	1,765	1,765	1,765
Additional annual costs – Relocation	3,830	2,470	2,470
Additional annual costs – Standards	1,158	1,158	1,158

*Table 4 Economic Model Inputs*

Lifecycle costs are based on the overall capital costs for each scheme and the assumed split between construction costs and mechanical and engineering (M&E) costs.

Non-cash releasing benefits have been identified for the Kensington Option 2 in terms of sickness absence (£322,000 per annum) and reduction in agency spend (£124,000 per annum). This is as a result of securing the future of the service and providing an improved clinical environment, thereby reducing staff sickness and improving retention and recruitment for staff.



### 1.3.6 Capital Costs

Capital costs for Options 2 (Kensington) and 3 (Balmoral) have been calculated on the following basis.

	Kensington Option 2 £'000	Balmoral Option 3 £'000
Departmental Costs	7,016	7,823
On Costs	304	517
<b>Works Cost Total</b>	<b>7,320</b>	<b>8,340</b>
Provisional location adjustment %		
<b>Sub Total (PUBSEC 225)</b>	<b>7,581</b>	<b>8,340</b>
Fees	843	917
Non Works Costs		
Equipment Costs	3,599	3,422
Planning Contingencies	420	500
Optimism Bias	175	791
<b>Total for Approval Purposes (excluding VAT)</b>	<b>12,358</b>	<b>13,970</b>
Inflation to current price base	105	726
<b>Forecast Outturn (excluding VAT)</b>	<b>12,463</b>	<b>14,696</b>

Table 5 Capital Costs

### 1.3.7 Cost Analysis Assumptions

The costs are shown in current prices, aligning with PUBSEC 225.

The Net Present Value (NPV) excludes sunk costs, transfer payments, VAT, capital charges, depreciation and other non-resource costs.

Optimism bias has been included within both options. The figure used for Option 3 (Balmoral) is higher as a result of the design being developed to early stages only. The amount of optimism bias assumed for Option 2 (Kensington) is at the level considered appropriate for the level of design included in a Full Business Case.

### 1.3.8 Results of Economic Appraisal

The result of the economic appraisal is detailed in the following table:

<b>Detailed Economic Summary (Discounted) - £'000</b>			
	<b>Do Nothing / BAU Option 6</b>	<b>Kensington Option 2</b>	<b>Balmoral Option 3</b>
<b>Costs</b>			
Incremental cost increase - opportunity cost	0	(2,810)	(2,296)
Incremental cost increase - capital (including optimism bias)	0	(24,662)	(27,611)
<b>Incremental costs - total</b>	<b>0</b>	<b>(27,472)</b>	<b>(29,907)</b>
<b>Benefits</b>			
Incremental cost reduction – revenue	0	468,628	468,628
Incremental benefit - cash releasing	0	(407,957)	(404,587)
Incremental benefit - non-cash releasing	0	9,869	0
<b>Incremental benefits - total</b>	<b>0</b>	<b>70,541</b>	<b>64,041</b>
<b>Value for Money</b>			
<b>Net Present Value (NPV)</b>		<b>43,068</b>	<b>34,134</b>
<b>Benefit-cost ratio</b>		<b>2.57</b>	<b>2.14</b>

Table 6 Economic Appraisal Summary

### 1.3.9 Combining the Financial and Non-Financial Appraisals

The Financial and non-Financial scores were combined to provide the following analysis:

<b>Option</b>	<b>Do Nothing / BAU Option 6</b>	<b>Kensington Option 2</b>	<b>Balmoral Option 3</b>
Weighted Scores	82	396	196
Rank (non-financial)	3	1	2
Net present cost (NPC) (£k)	724.767	681.698	690.633
Rank (financial)	3	1	2
NPC per point score (£k)	8.84	1.72	3.52
Rank (overall)	3	1	2
Percentage difference from preferred option	413%	Preferred Option	105%

Table 7 Combining the FBC Financial and Non-Financial Scores

### 1.3.10 Preferred Option

The above analysis confirms that from an economic perspective, combining both the non-financial and financial appraisal, Option 2 EMCHC in the Kensington Building is the preferred option for the service.

## 1.4. Commercial Case

### 1.4.1 Project Scope

The capital investment outlined in this FBC consists of a programme of projects to provide the facilities required on the LRI site in support of the relocation of the paediatric element of the EMCHC from the GH. The clinical areas and capacity required are detailed in the following table:

Accommodation Type	Capacity	Location at LRI	Comments
Inpatient Accommodation	<ul style="list-style-type: none"> <li>▶ 17 Paediatric Cardiac Ward beds</li> <li>▶ Associated support space</li> </ul>	Kensington, Level 1	Refurbishment project within existing space
Inpatient Accommodation	<ul style="list-style-type: none"> <li>▶ 12 Paediatric Intensive Care (PIC) beds</li> <li>▶ Associated support space</li> </ul>	Kensington, Level 5	Refurbishment project within existing space
Parents' Accommodation	<ul style="list-style-type: none"> <li>▶ 4 dedicated parents' bedrooms provided on Cardiac Ward</li> <li>▶ <i>(The requirement for an additional 11 beds will be leased)</i></li> </ul>	Kensington, Level 1	Combination of refurbishment of existing space and lease of apartments on Walnut Street
Multi-functional Interventional facility	<ul style="list-style-type: none"> <li>▶ 1 Biplane Catheter Laboratory with theatre capability</li> <li>▶ Associated support space</li> </ul>	New build, accessed through Kensington, Level 1	Part of new build project to create multi-functional room
Theatre	<ul style="list-style-type: none"> <li>▶ 1 Paediatric Cardiac Theatre</li> <li>▶ Associated support space</li> </ul>	New build, accessed through Kensington, Level 1	Part of new build project
Outpatient Clinics	<ul style="list-style-type: none"> <li>▶ 6 consultation examination rooms</li> </ul>	Kensington,	Refurbishment of

Accommodation Type	Capacity	Location at LRI	Comments
(Outpatients Department)	▶ Associated support space	Level 0	existing space
Diagnostic Physiology (Outpatients Department)	<ul style="list-style-type: none"> <li>▶ 4 echo rooms</li> <li>▶ 1 stress test room</li> <li>▶ Image reporting room</li> <li>▶ Associated support space</li> </ul>	New build, accessed through Kensington, Level 0	Part of new build project
Office Accommodation	▶ 50-60 desks <i>approx.</i>	Various options within close proximity to Kensington Building	Refurbishment of existing spaces. Various options will be reviewed and combined in order to make up total solution e.g. Jarvis Building, Rogers Ward in Victoria
Additional support space and enabling works	<ul style="list-style-type: none"> <li>▶ Multi-Disciplinary Team (MDT) room</li> <li>▶ Theatre changing room</li> <li>▶ Maternity Assessment Unit (MAU) / Assisted Conception Unit (ACU) / switchboard ventilation modifications</li> <li>▶ Works to Jarvis tunnel access ramp</li> </ul>	Various	Refurbishment works within existing space

*Table 8 Proposed EMCHC Services & Capacity*

Thorough feasibility studies have been undertaken to determine the ease of project deliverability within the available space. Whilst elements of the project will be of new build construction, a large proportion will be refurbished accommodation within existing space and therefore also constrained by the footprint of the Kensington building. Health Building Note (HBN) guidance has been applied where achievable and clinically essential, however there is a challenge to accommodate all HBN recommendations within the existing estate. All derogations from HBN have been signed off by the relevant leads (clinical, infection prevention, estates) and the Project Board (see appendix 17).

The new build will be constructed using an off-site produced, steel-framed solution that comprises a concrete floor and a high standard of internal finishes, representative of a traditional construction method. It offers a 60 year life span, comparable to that of traditional build.

## 1.4.2 Procurement Strategy and Implementation Timescales

There has been a comprehensive review of the procurement routes for the respective elements of works and a mixed approach to the procurement strategy for construction works has been adopted. This is detailed in the following table:

Procurement Route	New Build	Refurbishment
Traditional competitive tender	No	Yes
National Framework (SBS)	Yes	No

Table 9 Procurement Routes

The table below details the preferred procurement option and the rationale for the choice in relation to each area.

Area of works	Procurement Route	Reason for Selection
New build extension (theatre and cath lab dept, outpatients and Cardiac Physiology, and basement plant room)	Selection of a contractor from the 'Shared Business Service' framework (SBS)	Design and build by a specialist contractor will deliver Value For Money (VFM) and can be achieved to the required timescales.
Outpatients department (refurbishment of existing space)	Traditional competitive tender	Low value, light scope of works. Tender will achieve best VFM through our local Small and Medium-sized Enterprise (SME) contractors.
Cardiac ward (refurbishment of existing ward space)	Traditional competitive tender	Part refurbishment and relative low value. Due to nature of works open tender will achieve best VFM through our local SME contractors.
PICU (refurbishment of existing space)	Traditional competitive tender	Open tender chosen due to the type of works and the view that it would achieve VFM using local SME contractors.  The scheme will run concurrent with the main build and it was decided that giving it to the same contractor may cause programme and resource pressures for the new build contractor.
Parents Accommodation	Traditional competitive tender	Low value, light scope of works. Tender will achieve best VFM through our local SME contractors.
Office	Traditional	Low value, light scope of works.

Area of works	Procurement Route	Reason for Selection
Accommodation	competitive tender	Tender will achieve best VFM through our local SME contractors.
Additional support space and enabling works	Traditional competitive tender	Low value, light scope of works. Tender will achieve best VFM through our local SME contractors.

*Table 10 Preferred Procurement Options for Each Scheme*

Following the assessment of procurement options, the new build extension to the Kensington Building and the connections formed to the main building has been procured through the Shared Business Services (SBS) framework, whilst the refurbishment elements are being procured via a traditional competitive tendering process.

### New Build

The new build is procured via an alternative framework agreement (SBS). MTX Contracts Limited were selected to develop the detailed designs and deliver the new build, based on the Trust's previous experience of delivering large complex off-site build schemes with them. MTX Contracts Limited will be appointed from the SBS framework ref *SBS/16/JS/PZS/9094*. Details of the framework and evidence of our eligibility to use it are provided in Appendix 9. Design has been developed and the Guaranteed Maximum Price (GMP) reports are included in Appendix 13.

### Refurbishment

The refurbishment elements will be procured using traditional competitive tender and all schemes will be tendered using the Due North Procurement Portal. PICU, Cardiac Ward and the refurbishment element of the outpatients department have not been tendered as yet as construction is not due to start until April 2020 rendering the returns out of date if tendered to inform this FBC. Pre-tender estimates for these areas have therefore been worked up by Rider Levett Bucknall (RLB) (the Trust's cost advisor) and tender will be carried out post Full Business Case (FBC) approval.

Pre-tender estimates are included in Appendix 13.

The Trust will evaluate all the costs advisor's tender reports and appoint a contractor that meets time, cost and quality requirements. If the preferred contractors tender is not the lowest, a detailed analysis will be undertaken to demonstrate the benefits of appointing said contractor.

### Due diligence

Experian reports will be obtained for all shortlisted contractors. These will be analysed by the Trust finance lead and the Trust appointed cost advisor to support recommendations made to the Trust Executive.

The Experian reports for MTX can be found in Appendix 14.

### 1.4.3 Equipment Procurement Strategy

The Trust is adopting an approach whereby relevant equipment will be transferred between sites with the service moves, in order to minimise additional costs associated with the purchase of new equipment. The fully costed equipment schedules for each scheme are included in appendix 12.

An allowance is made within the capital costs of this FBC for all items of equipment detailed within the equipment schedule. A summary of the costs per department is as follows:

Areas	Furniture & Equipment (F&E) Cost
Theatre and Cath Lab Department	£2,155,374.00
PICU	£349,219.81
Consultant on call room	£635.00
Cardiac Ward	£97,982.00
Outpatients and Diagnostic Physiology Department	£534,535.00
Equipment Schedule - Other Costs	£5,000
IT Equipment	These costs are not included as part of the F&E schedule and are identified in the IT costs for the project
<b>TOTAL COST</b>	<b>£3,142,745.81</b>

*Table 11 Summary of Costed Equipment Schedules*

This business case assumes that the Cath Lab Imaging equipment package will be procured through the Trust's Managed Equipment Service (MES) provider, Althea.

Equipment will be purchased in alignment with the previously identified stages of procurement activity, prior to and during the commissioning period.

### 1.4.4 Proposed Key Contractual Clauses

The Trust's cost advisor will draft the contract for discussion and agreement between the Trust and contractors. The new build will be delivered using the New Engineering Contract (NEC) 3 Contract Option A. Any Z Clauses will be created so as not to unnecessarily increase cost or dilute Value for Money (VFM). The refurbishment projects will be delivered using the Joint Contracts Tribunal (JCT) form of contract.

The following table outlines the dates set for each contract as per the agreed master programme. The programme will be reviewed on a monthly basis and any changes will be reported to the Children's Hospital Project Board as required.

Milestone Activity	New Build Extension (Theatres and OPD)	Refurbished OPD	Refurbished PICU	Refurbished Cardiac Ward
Issue tender queries on ProContract portal	GMP issued and forms part of the FBC	08/06/2020 – 10/07/2020	02/12/2019 – 10/01/2020	17/02/2020 – 20/03/2020
Tender returns	GMP issued and forms part of the FBC	10/07/2020	10/01/2020	20/03/2020
Tender analysis and evaluation	GMP issued and forms part of the FBC	13/07/2020 – 31/07/2020	13/01/2020 – 24/01/2020	23/03/2020 – 03/04/2020
Award construction contracts	16/09/2019	03/08/2020	17/02/2020	11/05/2020
Commencement of construction	13/01/2020	24/08/2020	06/04/2020	29/06/2020
Construction complete	13/11/2020	13/11/2020	30/10/2020	13/11/2020
Operational commissioning	16/11/2020 – 11/12/2020	16/11/2020 – 11/12/2020	02/11/2020 – 11/12/2020	16/11/2020 – 11/12/2020
Transfer of service and go live	11/12/2020 - 15/12/2020	11/12/2020 - 15/12/2020	11/12/2020 - 15/12/2020	11/12/2020 - 15/12/2020

Table 12 Construction Programme

### 1.4.5 Risk

The general principle is that risks should be managed by the most appropriate partner in the construction process ensuring that the responsibility is placed on the designated partner with the ability to control and insure against that risk.

An assessment of how the associated risks will be apportioned between the Trust, the professional design team and the construction company has been carried out for each aspect of the project.

The costed risk registers for construction are included in appendix 8, and confirm the risk owners within each scheme.

### 1.4.6 Schedule of Accommodation

To enable designs and 1:200 plans to be produced, a Schedule of Accommodation (SoA) for each separate scheme was developed through engagement with the clinical teams, to confirm the required functional content. An iterative approach was adopted with the clinical and management teams to deliver a finalised schedule. Schedules of accommodation for each scheme are included in Appendix 16.



## 1.4.7 Drawings

The preferred option for each scheme has been fully developed as part of the design and tender process. The respective 1:50 drawings for each scheme are included in Appendix 15.

The following image shows an architect's impression of the EMCHC new build.



*Figure 3 Architect Impression of EMCHC New Build (Children's Hospital Phase I)*

## 1.4.8 Compliance with Department of Health Requirements for Healthcare Buildings

Whenever possible, the schemes will comply with Building Regulations, European Standards, British Standards and Codes of Practice, guidance on the design and construction of primary care and general medical facilities. Much of this is contained in a series of DH publications and guidance documents primarily written for the NHS, including but not limited to the following:

- ▶ Health Building Notes (HBNs);
- ▶ Health Technical Memoranda (HTMs).

Specific details for each scheme in relation to alignment with HBNs and HTMs, compliance and derogations can be found in the Clinical Quality Case. The signed derogation schedules are included in Appendix 17.

### 1.4.9 Building Research Establishment Environmental Assessment Method (BREEAM)

The BREEAM assessment method will be used for the new build element of the project only. It has not been applied to refurbished areas owing to the use of the existing infrastructure and the minimal works being undertaken.

The Trust appointed BREEAM assessor carried out a pre-assessment on the new build to determine the available target level of classification at FBC stage. The decision was made to focus on achieving BREEAM 2014 'Very Good'.

The BREEAM pre-assessment report can be found at Appendix 18.

### 1.4.10 Fire Code Compliance

Fire code compliance has been ensured throughout the development of the robust design for both the new build and refurbished areas – see Appendix 19. Designs have been signed off by the Trust's Fire Compliance Officer.

### 1.4.11 Infection Prevention (IP)

The estates embedded Senior Infection Prevention Nurse has been involved in the design development from the outset, all issues and concerns have been addressed and the design and identified IP derogations signed-off by the Trust Lead Microbiologist.

### 1.4.12 Planning Permission

Planning consent is required only for the new build extension of this project. Constructive pre-application meetings have been held with the local planning authority in relation to this application, which was submitted on 11<sup>th</sup> July 2019, with consent expected to be issued in November 2019. This allows time for the Trust and the Contractor to work through and discharge any pre-commencement conditions prior to the works beginning in early 2020.

The Trust are currently undertaking an archaeological dig on the new build site, in order to mitigate potential time delays, the requirement for this has been confirmed by the lead planner. The local planning authority has confirmed that these works can be undertaken prior to planning consent being granted.

## 1.5 Financial Case

### 1.5.1 Introduction

The purpose of this section is to set out the forecast financial implications of the preferred options (as set out in the Economic Case) and the proposed deal (as described in the Commercial Case). EMCHC currently contributes circa £8 million benefit per annum to the Trust's Income and Expenditure (I&E) position. The Trust would therefore suffer financially if the service was decommissioned. Although there are additional costs driven by the relocation of the service and the national standards that the trust is required to achieve, these are significantly less than the cost of losing the service.

## 1.5.2 Capital Costs

The capital cost of the scheme has been identified as £14.174 million. This is broken down in the following table:

	Kensington £'000
Departmental Costs	7,016
On Costs	304
<b>Works Cost Total</b>	<b>7,320</b>
Provisional location adjustment %	
<b>Sub Total (PUBSEC 250)</b>	<b>7,320</b>
Fees	843
Non Works Costs	
Equipment Costs	3,599
Planning Contingencies	421
Optimism Bias	175
<b>Total for Approval Purposes (excluding VAT)</b>	<b>12,358</b>
<b>Inflation</b>	<b>105</b>
<b>Forecast Outturn (excluding VAT)</b>	<b>12,463</b>
Non Reclaimable VAT	1,710
<b>Forecast Outturn (including VAT)</b>	<b>14,174</b>

Table 13 Capital Costs

The funding of the scheme is through the Trust's capital programme (£7.874 million) and charitable donations (£6.3 million). The Cath Lab has been assumed to be funded through the Trust's Managed Equipment Service Provider.

## 1.5.3 Income and Expenditure Position

The income and expenditure position is driven by the following three elements:

- ▶ Additional activity required to meet the minimum level of surgical activity for a congenital heart centre. Activity is assumed to grow from 375 cases in 2018/19 to 487 cases in 2021/22 (NHS England agreed trajectory);
- ▶ The delivery of minimum standards required to retain the status of a Level 1 congenital heart centre (e.g. workforce standards, minimum staffing levels, etc);
- ▶ Changes in costs related to the relocation of the centre from the Glenfield to the Leicester Royal Infirmary.

The impact of these drivers is summarised as follows:

Total Impact on I&E	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000
Contract Income	1,670	3,481	5,065	5,065
Charitable Income		6,300		
<b>Income</b>	<b>1,670</b>	<b>9,781</b>	<b>5,065</b>	<b>5,065</b>

Additional Pay	1,282	3,943	3,990	4,006
Additional Non Pay	227	647	1,387	1,387
Transport Costs		30		
<b>Total Additional Operational Costs</b>	<b>1,509</b>	<b>4,619</b>	<b>5,378</b>	<b>5,394</b>
<b>Impact on Operational Position</b>	<b>162</b>	<b>5,162</b>	<b>(313)</b>	<b>(329)</b>
Capital Charges on Treasury Funded assets	36	247	525	507
Capital charges on donated/charitable funded assets		70	281	281
<b>Total Capital Charges</b>	<b>36</b>	<b>317</b>	<b>806</b>	<b>788</b>
<b>Impact on Trust I&amp;E</b>	<b>125</b>	<b>4,845</b>	<b>(1,118)</b>	<b>(1,116)</b>
Revenue adjustment for Charitable donations		(6,230)	281	281
<b>Impact on Trust Performance position</b>	<b>125</b>	<b>(1,385)</b>	<b>(838)</b>	<b>(836)</b>

Table 14 Income and Expenditure Impact

The additional activity between 2019/20 and 2022/23 contributes an additional £3.3million of income. This is offset by the investment to achieve national standards and the additional costs of relocation, which totals £4.1 million.

A sensitivity analysis has been run which caps activity to 430 cases per annum. This increases the impact to a deficit of £2.1 million.

#### 1.5.4 Impact on the Trust's Balance Sheet

The Trust has assumed that it will account for the asset on its balance sheet. The impact is anticipated as follows:

	2019/20 £'000	2020/21 £'000	2021/22 £'000
Opening Value		2,074,638	8,812,371
Additions	2,074,638	12,098,979	
Impairment		(5,361,246)	
Depreciation		(126,489)	(505,957)
Closing Value	2,074,638	8,812,371	8,306,413

Table 15 Impact on Trust Balance Sheet

Although the Trust will account for depreciation on the asset funded by charitable funding, this will be treated 'below the line' as far as its financial performance is concerned and should be offset by charitable income on an annual basis.

## 1.5.5 Charitable Funding

Leicester Hospitals Charity currently has £2.8 million of charitable funds available to support this project. It is confident that by the time the charitable funds are required it will have raised the further £3.5 million, which has been assumed as funding in the business case. All of this funding will be required in 2020/21. If there is a difference between the amount of money that has been successfully fundraised and the total required for the project (£6.3 million) at the time when the Trust are setting the capital budget for 2020/21, this figure will be reserved against the Trust's operational capital budget (CRL). As the charitable funds increase, this reserve will be released to support other capital expenditure in the Trust from a reserved items list.

The way in which Trust's capital and charitable donations are treated from an accountancy perspective differ – for this reason, it must be noted that a shortfall of (for example) £1 million will have an adverse impact on the Trust's finances of circa £20,000 per annum.

## 1.6 Management Case

### 1.6.1 Project Plan

The project will be managed using PRINCE2 compliant methodology. The Reconfiguration Project Manager is supported by the UHL Capital Projects Team, the wider Reconfiguration Team, clinical team and external specialists and consultants as required.

### 1.6.2 Project Programme

The project programme outlines the series of activities and milestones that are required in order to complete the project by December 2020, co-locating the paediatric cardiac service on the same site as the rest of paediatrics in order to comply with NHS England Congenital Heart Disease (CHD) standards.

The milestones for the project are set out in the following table:

Milestone Activity	EMCHC Project
Guaranteed Maximum Price (GMP) received from Construction Partner	June 2019
FBC approved by UHL Trust Board	September 2019
Full Planning Approval (required by)	December 2019
Commencement of construction	January 2020
Construction complete	November 2020
Operational commissioning	November - December 2020
Transfer of service and 'go live'	11th - 15th December 2020

*Table 16: Table of Milestones*



The detailed project programme can be found in appendix 24.

There are interdependencies with specific milestones of other projects, which will impact the EMCHC programme if these are missed:

Project	Interdependency	Milestone
ICU Project	Vacates ward 8 for refurbishment for the Gynaecology Assessment Unit (GAU) and Early Pregnancy Assessment Unit (EPAU)	Ward 8 vacant end of September 2019
Planning approval	The commencement of work on the new build is contingent on Leicester City Council approving our planning application	Approval by December 2019
Level 5 moves	Vacates Level 5 Kensington for refurbishment for the PICU	Level 5 vacant January 2020
Gynaecology Project	Vacates Ward 1 and Ground Floor Kensington for refurbishment for the Cardiac Ward and Outpatient Department	Ward 1 vacant April 2020; Ground Floor Kensington vacant May 2020
ICU Project	The EMCHC project vacates theatre capacity at the Glenfield Hospital for the HPB and Transplant service to move as a part of the ICU and associated services project	EMCHC service moves to the LRI December 2020
Renal Project	The EMCHC project vacates ward space for the Renal service to move to the Glenfield Hospital following the move of the Transplant service	EMCHC service moves to the LRI December 2020
Infrastructure Project	Dependency on infrastructure supporting the needs of the EMCHC, particularly the complex infrastructure and essential power required for the PICU and ECMO service. This is being managed between Project Managers.	Ongoing through the programme

*Table 17 Project Interdependencies*

### 1.6.3 Critical Friend Review

In November 2015, the UHL Audit Committee approved a paper recommending that a Gateway (also known as Healthcheck) Review is carried out at different stages (Outline Business Case (OBC); Full Business Case (FBC) and Post Project Evaluation (PPE)) of a Reconfiguration Project, in order to give the Project's Senior Responsible Officer (SRO) (and the Trust) a level of confidence that the project is fit for purpose.

As the Trust have already committed to the project to move the paediatric EMCHC to the LRI, it was felt that this is not a decision making business case, therefore the decision was made to carry out a Critical Friend Review in the place of a formal Gateway review.

In June 2019, three external reviewers carried out a full Critical Friend Review on this project, on behalf of the Infrastructure and Projects Authority, with the following summary:

The project implements national standards and aligns to national policy around congenital heart services. It is a key component in the overall reconfiguration of the LRI site especially the establishment of a Children's Hospital and so aligns with Trust strategy. NHS England confirmed the role for this site within their commissioning plans. The Review Team were told of full support from the Sustainability and Transformation Partnership.

The service provides positive contribution to the Trust's financial position and although the new standards of care will require higher staffing levels and so greater costs it is projected to contribute around £5.5m per annum after relocation. The Review Team were pleased this calculation had been properly stress tested within the Business Case as it appeared somewhat evidence light.

Of crucial significance was the evidence and the confidence that despite the upheaval of a complex set of changes the already excellent service would not be compromised and higher standards will be met for an increased number of patients.

The project is well managed and the leadership respected and obviously capable. A small number of key individuals had particularly crucial roles and some thought should be given to ensuring that they remain in position for the duration. Ensuring no individuals in crucial roles were unnecessarily over committed is important and a greater role for the PMO which resides within the wider Reconfiguration Programme might assist.

A list of recommendations was provided, and these are detailed in full in the management case of this business case.

#### **1.6.4 Post Resources**

The resources required for full project management have been developed by the project team. These costs are accounted for within the capital costs of this project, and through the wider Reconfiguration budget.

#### **1.6.5 Project Governance**

Project Governance arrangements have been established to reflect national best practice guidance and the Trust's own Capital Governance Framework. This is shown in the following diagram:

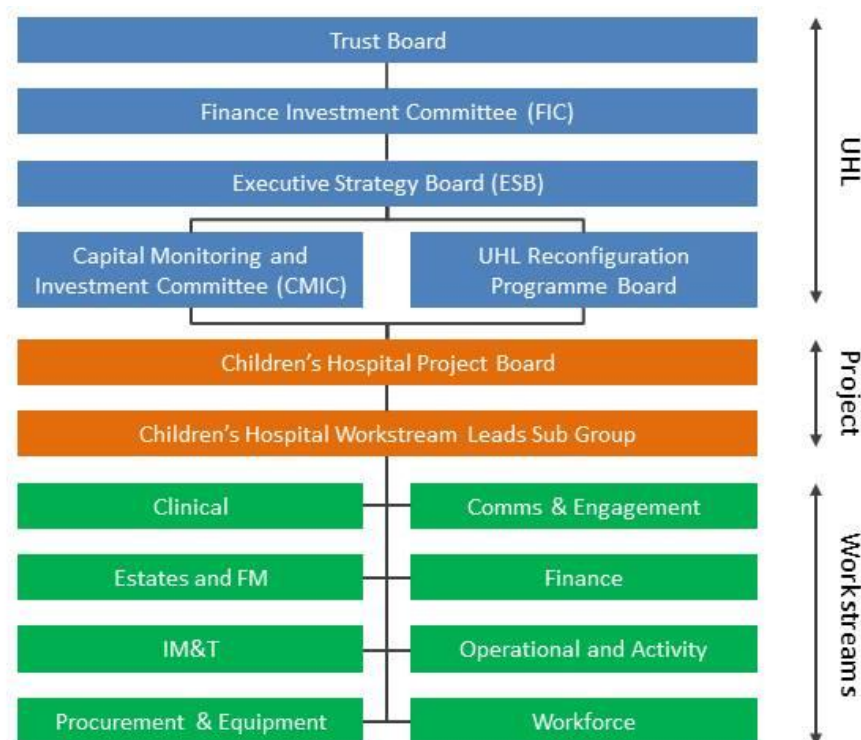


Figure 4 Project Management Structure

The Full Business Case (FBC) will require approval from the Children's Hospital Project Board, the Reconfiguration Programme Board, the Executive Strategy Board (ESB), Finance Investment Committee (FIC) and the UHL Trust Board.

These Boards and Committees have membership from Executive and Non-Executive Directors, as well as key stakeholders and Patient and Public Involvement (PPI) representatives. The UHL Chief Executive chairs the ESB, FIC is chaired by the UHL Deputy Chairman and the UHL Chairman chairs the Trust Board.

This Business case does not require external approval since the value is less than £15m; and the source of capital funds is internal.

### 1.6.6 Project Reporting and Monitoring

Monthly progress (highlight) reports are submitted to the Project Board and UHL Reconfiguration Board for review and then onward reporting and management to the UHL Executive Strategy Board.

The project will subsequently move towards the creation of an operational commissioning team(s). This will comprise management and clinical representatives who are skilled to ensure the production of a detailed implementation plan to operationally deliver the enabling and service moves required for the paediatric element of the EMCHC to be transferred from the Glenfield Hospital to the LRI, and to ensure the clinical sustainability of the Adult service at the Glenfield. The team(s) will operate within the existing governance of the project.



The end stage of the project will result in the completion, handover and commissioning of the new facilities. The Project Board is responsible for providing assurance that the project has been delivered in terms of product, programme, quality and budget in line with the business case.

### 1.6.7 The Children's Hospital Project Board

Project deliverables, progress and escalations are reported to the Children's Hospital Project Board. The Project Board meets on a monthly basis. The membership, their key roles and responsibilities are identified in section 6.4.1.

### 1.6.8 Benefits Management and Realisation

The delivery of benefits will be managed through the Children's Hospital Project Board.

The Benefits Realisation Plan is detailed in appendix 25 and includes detailed plans for each benefit.

Some of the key benefits to be realised are:

- ▶ Co-location with the wider paediatric service;
- ▶ Capacity to meet the activity detailed within the NHS England trajectory;
- ▶ Improved PLACE scores;
- ▶ Improved infection prevention;
- ▶ Improved retention and recruitment of staff by providing the facilities in order to protect the future of the service.

These are aligned with the cash and non-cash releasing benefits that have been outlined in more detail in the Economic case of this business case.

### 1.6.9 Change Management

Change management associated with the project will be managed through the Project Board, under the chairmanship of the Senior Responsible Owner (SRO) in line with change management and delegated authority policy – see Appendix 26. Day-to-day change management issues will be discussed at project workstream level and any resultant contract and/or cost changes will need to be approved by the Project Board.

### 1.6.10 Risk Management

UHL's approach to risk management, in accordance with its Board Assurance Framework, the Capital Investment Manual and HM Treasury Green Book, is designed to ensure that the risks and issues are identified, assessed and mitigation plans developed in a risk management plan. All risks have a responsible owner identified.

The risk management approach for the programme is in accordance with PRINCE2 methodology. The Project Team (involving all workstreams) has undertaken a risk assessment to identify the major areas of risk and highlighted the controls currently in place, or to be put in place in order to mitigate the risks.

Project risks are managed through the risk register (Appendix 7). This is a live document and as such will be amended as the project progresses. The highest rated risks are escalated to the Reconfiguration Board on a monthly basis via the highlight report.

Fully costed construction risk registers have been developed with input from Rider Levett Bucknall (RLB) (the Trust's cost advisors) and principle contractors. This has been used to inform the contingency levels for the project and is attached as appendix 8.

### 1.6.11 Publication of the Business Case

This business case and its appendices will be publicly available following approval at the UHL Trust Board.

## 1.7 Clinical Quality Case

### 1.7.1 Philosophy and Principles of Care

The following is an extract from the EMCHC operational policy:

The EMCHC aims to lead the provision of the latest cardiac treatments, which have the best cardiac outcomes for children and adults, regionally and nationally.

High quality care delivered by a well-trained and educated workforce resourced to meet the projected case mix and workload:

- ▶ Flexibility of resources, both physical and human, to deal with changing workloads and case mixes;
- ▶ Care according to clinical guidelines that are compliant with current national and international guidelines, where relevant (stored on UHL Policies and Guidelines Library);
- ▶ All patient management in line with Seven Day Services Clinical Standards Policy;
- ▶ Design for patient safety, privacy & dignity, including age-specific facilities for children, adolescents, adults and adults with additional needs;
  - Minimisation of patient, staff and goods moves;
  - Minimisation of steps in processes/hand-offs;
  - Integration of diagnostic and assessment processes;
  - Optimised use of technology, including integrated IT (iCRIS, PACS & EPR);
- ▶ Requirements to deliver cardiac care must acknowledge effective delivery of paediatric transport services and ECMO;
- ▶ Using the skills and expertise of professional staff flexibly, with joint training in order to transfer skills;
- ▶ Access to senior clinical opinion from the earliest point in the patient pathway and onwards;
- ▶ Protocol-led care across the East Midlands Network with standardisation of patient pathways integrating the input of all care practitioners (including fetal medicine specialists, paediatricians with expertise in cardiology, cardiac physiologists, and others);

- ▶ Improved junior doctor / nursing training and improved skill mix that attracts high quality recruitment and retention;
- ▶ Provision of high quality family centred care with appropriate parent accommodation.

## 1.7.2 Design Development

### Theatres and Cath Lab Department

The clinical models of care and adjacencies (appendix 10) for the cardiac theatre and cath lab were initially developed with the clinical teams, and have been reviewed and refined through the design development process. The new combined cardiac theatre and cath lab department is a change to the model of care that is currently in place at the Glenfield Hospital, where the two are in separate physical locations. Robust clinical operational policies reflecting the needs of patients have been developed to inform the design brief and solution, which have been based on a combination of Health Building Note (HBN) guidance, and decisions made arising from a thorough clinical design engagement process. No HBN exists relating to a combined theatre and cath lab department, therefore strong multi-disciplinary clinical engagement has been particularly important to ensure that the needs and requirements of users is met.

The design solution for the cardiac theatre and cath lab is a new-build department on Level 1 of the Kensington Building (signed off plans are detailed in appendix 27). This is physically adjacent to theatres 17 and 18, which will continue to be used by the obstetrics service until the point at which the rest of paediatrics moves into the Kensington Building. At this juncture, the entire operating department has the potential to be remodelled to deliver a paediatric theatres department for all children's surgical activity. The department has been designed so that it can operate functionally as a standalone department until this point.

### Paediatric Intensive Care Unit (PICU)

In order to support congenital heart activity (including the requirement to increase surgical activity) at the LRI, 12 paediatric intensive care beds are being built. This allows for futureproofing for increased activity over and above that required to reach the minimum levels of surgical activity, and for times when demand is higher than usual, e.g. winter surges. This includes the provision for Extra Corporeal Membrane Oxygenation (ECMO) Level 4 Intensive Care, which takes place on the PICU. A Children's Intensive Care Unit (CICU) already exists on the LRI site and whilst initial plans were to create a combined unit, this was deemed to be unaffordable to the scheme as a part of Phase I. For this reason, there are plans to develop a combined unit for all paediatric intensive care as a part of Phase II (the wider Children's Hospital Project). Nevertheless, same site colocation will deliver considerable increases in visibility and adjacency of clinical staff over current arrangements.

The clinical models of care and adjacencies (appendix 10) for the paediatric intensive care unit were initially developed with clinical teams from both the LRI and the Glenfield in an effort to ensure consistency in planning across the two facilities. This is important as staff work across both units. These have been reviewed and refined through the design development process. Robust clinical operational policies reflecting the needs of patients have been developed to inform the design brief and solution, which have been based on a combination of Health Building Note (HBN) guidance, and decisions made arising from a thorough clinical design engagement process.

The design solution for the PICU locates the unit in retained estate on level 5 of the Kensington Building (signed off plans are detailed in appendix 11). This involves a complete refurbishment of existing office space to create a 12 bedded unit, consisting an 8 bed bay and 4 side rooms. One of the side rooms will also be a simulation room, to allow teaching on the unit. Two of the side rooms are isolation rooms, both with a ventilated lobby to allow either infectious or immune suppressed patients to be cared for. A parents' lounge and separate quiet room are located by the entrance to the unit, allowing families and carers the opportunity to have a break from the unit without there being too great a physical separation.

A dedicated lift call system will be installed onto one of the lifts for rapid transfer between the PICU, the Theatre and Cath Lab, Cardiac Ward, and down to the Basement Level to access the wider hospital (Children's Emergency Department, CT and MRI facilities).

Due to the specialist, complex and potential long stay nature of the ICU environment, the needs of the patient and staff are particularly paramount and this is reflected within the design. Examples include:

- ▶ Design maximises natural light;
- ▶ Four side rooms, of which two are isolation rooms to meet IP requirements;
- ▶ The use of high quality finishes within the unit will play an important role in ensuring a safe and clean environment, and will include:
  - Extensive wall protection throughout
  - High quality compact laminate for nurses station and work surfaces

### Paediatric Cardiac Ward

A Paediatric Cardiac Ward is required at the LRI in order to provide inpatient congenital heart activity (including the requirement to increase surgical activity). Initial activity modelling demonstrated the requirement for 20 beds, however, bed occupancy rates were reviewed with the senior medical and nursing management allowing the safe reduction to 17 beds whilst still providing capacity to allow for future growth. This is a reflection of the sustained reduction in Average Length of Stay (ALOS) in line with both national trends and the EMCHC network approach to 'care closest to home'. The cardiac ward will provide care for all inpatients (aside from those requiring level 3 critical care) and for day case patients (primarily patients requiring an interventional or diagnostic catheter procedure). Three of the beds (a two bed bay and a side room) have medical gases and staffing levels factored into the workforce plan to allow level 2 high dependency patients to be looked after. This will improve flow out of the PICU and allow these step down patients to be looked after in a more appropriate environment.

The clinical models of care and adjacencies (appendix 10) for the cardiac ward have been clinically driven, reflecting current practice and opportunities to transform models of care.

The design solution locates the cardiac ward on Level 1 of the Kensington Building (signed off plans are detailed in appendix 28). This is the same level at the Cardiac Theatre and Cath Lab department, allowing quick movement of patients to the theatre and cath lab, and transfer back from the cath lab following recovery (post-surgery patients go directly to the PICU). The cardiac ward also provides the location for four

parents' bedrooms, a parents' lounge (including kitchen facilities), quiet room and an office for the charity Heartlink who are funding much of the parents' space, as well as the play room.

### Paediatric Cardiac Outpatient Department

A Paediatric Cardiac Outpatient Department is required for outpatient clinics and non-invasive diagnostic investigations to take place, as well as the imaging of some inpatients if they are well enough to be brought down to the unit (other imaging will take place on the ward or the PICU). The capacity planning took into account the increased activity arising from the increased number of surgical and catheter procedures, whilst including an allowance for some of these patients to be seen as outpatients in peripheral clinics throughout the network.

The clinical models of care and adjacencies (appendix 10) for the cardiac outpatient department have been clinically driven, reflecting current practice and opportunities to transform models of care.

The Cardiac Outpatient Department will be located on the ground floor of the Kensington Building, in a combination of refurbished and new build accommodation (signed off plans are detailed in appendix 29). The department will accommodate six consultation-examination rooms, four echocardiogram rooms (one of which has been increased in size in order to future-proof for larger equipment if required), a stress test room, treatment and venepuncture room, ECG room, weights and measures room, a pacing and tape room, image reporting room, a further two offices and an interview room that will accommodate Clinical Psychology and other allied health care professionals as needed.

### Support Spaces

The following areas are required to support the paediatric Congenital Heart Service at the LRI, and the capital cost for these areas are included within the scope of this business case:

- ▶ **Offices:** approximately 50-60 desk spaces (combination of clinical and administration functions) are required at the LRI to support the service. The cost for the provision of office space is currently included as a Provisional Cost (PC) sum within the capital cost for the business case,
- ▶ **Multi-Disciplinary Team (MDT) Room:** in order to comply with the CHD standards, the EMCHC require an MDT room which has suitable multimodal IT and display facilities as well as remote networking capability including high resolution video conferencing. The Parentcraft Room (Ground Floor, Kensington Building) will be the location for an MDT room, which will be shared with the Maternity service going forward.
- ▶ **Enabling Ventilation:** the new build extension involves the blocking up of windows in the Assisted Conception Unit (ACU), Maternity Assessment Unit (MAU) and Switchboard which are all currently naturally ventilated. The costs associated with ensuring that existing local ventilation is enhanced in these areas are borne by this business case.
- ▶ **Theatres/Cath Lab Changing Room:** An additional unisex changing room with individual cubicles and lockers will be created in an existing quiet room, opposite the new build theatre and cath lab extension.

- ▶ Jarvis Access Tunnel: The access from the Kensington Building to the wider Leicester Royal Infirmary site (primarily the Children's Emergency Department, MRI and CT scanning, and wider paediatric services) will be through the tunnel which runs under the Jarvis Building. In order to facilitate the safe transfer of patients on ECMO, the gradient of an existing ramp will be reduced.
- ▶ Parents/Carers Accommodation: Additional bedrooms for parents/carers will be leased in the accommodation block on Walnut Street. The revenue for these are identified within the Income and Expenditure position for this business case, and through charitable funding.

### Adult Congenital Heart Disease (ACHD) Facilities

Whilst this business case is primarily concerning the paediatric Congenital Heart service, the adult service (who account for approximately 20% of surgical patients and a higher percentage of catheter cases) will remain at the Glenfield Hospital with the rest of the adult Cardiology service. Through the development of plans for paediatrics, plans have ensured that the adult service has what it needs at the Glenfield, in terms of spatial capacity, equipment and workforce. Costs for these are included within this business case (duplication of equipment, and additional staff required).

### 1.7.3 IM&T Strategy

The Information Management and Technology (IM&T) strategy to support the successful transfer of the EMCHC is to ensure that all of the existing systems in use; can and will be replicated across the University Hospitals of Leicester sites to support current service functionality.

The unit will have all relevant Trust clinical IT systems fully integrated within each area. The Trust's IT providers IBM, have been fully engaged throughout the design process and have provided costs for the FBC and confirmed their capacity to deliver the requirements for the project in line with the agreed programme of works.

### 1.7.4 Clinical Leadership

Clinical leadership is a key factor to the successful delivery of the project objectives, with the following leads playing key roles within this:

- ▶ Clinical and non-clinical leadership from within the Women's and Children's Clinical Management Group (CMG) has been critical, and this has been key in the development of models of care, clinical operational policies and input to and sign off of design solutions. This has included the CMG Clinical Director, CMG Head of Operations, EMCHC Head of Service, EMCHC Medical Lead and EMCHC Nursing Lead. These have been of paramount importance when difficult decisions or compromises have been made in order to deliver the business case within its constraints, ensuring that the brief is met and the delivery of both a clinical and cost effectiveness solution for the provision of patient care:
- ▶ Clinical and non-clinical leadership from Intensive Care, Theatres, Anaesthetics, Pain and Sleep (ITAPS), Renal, Respiratory, Cardiac and Vascular (RRCV) and Clinical Support and Imaging (CSI) have also been involved when key decisions have been made.



## 1.7.5 Stakeholder Engagement

Stakeholder engagement is a vital part of the project in order to ensure that all needs are met through the delivery of the project.

### Internal Stakeholders

The following internal stakeholders have been consulted through the development of this business case:

- ▶ Staff: Engagement with clinical leads has taken place through the development of the designs, equipment schedule and workforce and Organisational Development (OD) plans for the project. A full version of the communications and engagement plan is detailed in appendix 4.
- ▶ Internal clinical support services: Engagement has been undertaken and is ongoing with a range of clinical support services impacted by the project, including:
  - Imaging (CT, MRI, Plain-film)
  - Pharmacy
  - Physiotherapy and Occupational Therapy
  - Speech and Language Therapy (SALT)
  - Play Therapy
  - Dietetics
  - Bone Bank (Heart Valves)
  - Pathology (Blood Transfusion)
- ▶ Estates and Facilities Management (FM): Leads from the Estates and Facilities management team have been fully engaged in the project with regards to the impact of the moves from an estates, infrastructure and FM perspective.
- ▶ Leads from Infection Prevention, Security, Health and Safety, Manual Handling and Fire Safety have been liaised with through the development of plans for this project. This has included external advice and support where appropriate.

### External Stakeholders

The following external stakeholders have been consulted through the development of this business case:

- ▶ Patient Partners and Representatives: The patient representative has attended clinical design engagement meetings, in order to act as the 'patient voice', and to feed this information into the planning process. The patient representative who has been supporting this project has recently stepped down, however a new representative has been appointed and will progress this role with the project.
- ▶ Commissioners: there is representation from Leicester City CCG, as the lead commissioner for UHL, and NHSE Specialised Commissioners on the Children's Hospital Project Board.

- ▶ Charities: the EMCHC is lucky to be well supported by two local congenital heart disease charities – Heartlink and Keep the Beat. Both charities engage with the project through the EMCHC Specialist Board meetings and charity Board Meetings, as well as on an individual basis in ad hoc meetings. They have been extremely supportive of the project, and are providing financial support for some areas.

### 1.7.6 Consultation

A national consultation on Congenital Heart Services was carried out by NHS England as a part of the development and implementation of the congenital heart disease standards. As this business case relates to the delivery of these standards, there is no requirement for further formal consultation.

### 1.7.7 Patient Experience and Safety

One of the potential areas for improvement is in equity of access to care input from other speciality areas; in particular the neonatal and paediatric surgical specialists, and paediatric Gastroenterology and Neurology. It is hoped that same site co-location will increase immediacy of emergency specialist input but perhaps more importantly, to increase routine day to day input, shared care and ownership of more complex patients and enhanced Multi-Disciplinary Team (MDT) decision making. It is also anticipated that there will be enhanced reciprocal availability of cardiac input and expertise for neonatal and general paediatric admissions, which will have an overall uplifting impact on the day to day paediatric provision at UHL.

### 1.7.8 Infection Prevention

Infection prevention leads have been fully involved in the design process; there is some derogation from HBNs which has been ratified with their involvement and signed-off. The relevant standards applied include, but are not limited to HBN00-09 “Infection Control in the Built Environment”, HTM03-01 “Heating and Ventilation in Healthcare” and HTM04-01 “Safe Water in Healthcare”. The Derogation Schedules attached at Appendix 17 confirm the documents to which design standards have been developed.

Construction sites will be monitored throughout the programme from initial set-up to facility commissioning. Dust control, water testing and flushing regimes and Aspergillus risk assessments will all form part of contract agreements. Infection Prevention colleagues will be actively involved throughout the process.

### 1.7.9 Business Continuity Planning

The Trust has considered the complete site in ensuring business as usual activity at Leicester Royal Infirmary during the construction period associated with these schemes. During this period there will be a significant new build extension, two ward refurbishments and a minor refurbishment within an Outpatients department in the Kensington Building. These plans are fully articulated along with the high level plan for the new extension outlined within the section 7.6 for each individual scheme. In addition, appendix 31 shows the proposed site plan for the contractors’ site during the new build extension and construction traffic movement.

All departments have well established Business Continuity Plans in place and prior to commencement of this extensive site development the Trust will hold a series of



Business Continuity Workshops lead by the Trust Emergency Planning Lead. This will enable the Clinical Management Group (CMG) to review and update their procedures and ensure staff are familiar with them.

### 1.7.10 Workforce

The workforce planning element of the EMCHC business case was acknowledged and highlighted as a key component of the overall planning and design process from the outset. The key national driver for the workforce plan comes primarily from the NHS England Congenital Heart Disease Standards for Level 1 Surgical Centres for both Paediatrics and Adult (ACHD) published in May 2016 and in particular their sections on Staffing and Skills (Section B). For services not specified in the Congenital Heart Disease Standards, UHL followed the existing workforce safeguards (as outlined in the Oct 2018 NHSI “Developing Workforce Safeguards”) that supports providers “to deliver high quality care through safe and effective staffing”, and NICE guidance.

From a governance perspective, a workforce planning sub group was established in January 2018 that reported directly into the Children’s Hospital Reconfiguration Board and was chaired from the outset by the Head of Operations for the Women and Children’s Clinical Management Group (CMG). The plan needed to address the following two key objectives:

- ▶ First and foremost was the NHSE stated aim to be co-terminus with the Children’s Hospital and,
- ▶ Secondly, to meet increased surgical and associated activity with a plan to move from delivering 375 surgical cases a year to 500 cases per year.

To address the key objectives each service area was asked to characterise their workforce demand in relation to three key components: delivery of the NHSE CHD standards, the impact of re-locating services (at the LRI for Paediatrics and Adult services remaining at Glenfield Hospital) and delivering the additional activity. In order to plan fully, this required looking at over 25 services directly or indirectly impacted by the changes.

The methodology adopted is standardised where possible and is applied to all UHL services via the UHL Workforce Strategy which forms part of the UHL People Strategy. The 6 step methodology, originally developed by Skills for Health is the framework for all operational and strategic workforce planning and begins with defining the plan, then mapping the service change and then defining the required workforce in order to create a costed workforce plan. To provide a senior internal challenge, a Workforce Star Chamber process was utilised in January and February 2019, including executive leads for Medical, Nursing and Heads of Operational teams from all impacted CMG’s plus workforce, finance and project leads.

The workforce demand from each service was categorised by the impact it would have on achieving the CHD standards, relocation and activity growth, for each service in order to deliver services day and night, and, where appropriate, at weekends. The implications of splitting some services that are currently a shared adult and paediatric service at Glenfield Hospital has led to inefficiencies in some areas as some specialist teams will now have to deliver across two sites rather than one. These may be offset in some cases by some efficiencies of a co-located paediatric team at the LRI. The longer term Children’s Hospital project to have a co-located footprint based at the LRI (for

example having a larger but co-located PICU service) will result in greater efficiencies, but in the short term the need to house these services in the available space and within the appropriate budget means that some efficiencies cannot be found until the longer term project and objectives are achieved.

From a workforce safeguards perspective, where possible UHL followed the National Quality Board (NQB) guidance and utilised professional judgement, evidence based tools where they exist (within UHL we utilised the Directorate of Nursing acuity tool kit to ensure the nursing areas, particularly the Cardiac Ward and PICU were compliant looking at acute hours per patient metrics) and outcomes. This informed the nurse-to-bed ratio. The use of the Star Chamber included the Director of Nursing and Medical Director and their assessment of safe, effective and sustainable staffing.

### 1.7.11 Human Resources (HR) Planning

From an HR perspective, UHL has a Management of Change Policy (Dec 2015) that provides the framework for managing organisational or service changes which impact on established roles and/or staff numbers. A HR plan (Appendix 30) has been developed which outlines the process and timescales to be followed in delivering the service moves; this is aligned with both the workforce plan and will help to form the Organisational Development plan. In addition the Transitional Plan will be developed as the project progresses.

## 1.8 Recommendation

The Trust Board is recommended to approve this business case.



Signed:

Mark Wightman, Senior Responsible Officer

Date: 6<sup>th</sup> August 2019

## 2 | The Strategic Case

### 2.1 Introduction

This section provides an overview of the University Hospitals of Leicester NHS Trust (hereafter referred to as the 'Trust' or 'we') and its strategic objectives, to set the context for how the East Midlands Congenital Heart Centre (EMCHC) service move fits with the Trust's strategic direction and five year plan. It also provides an overview of the policies driving the changes at National, Regional and Local level, and the guidance documents underpinning these.

### 2.2 Rationale and Objectives

This Full Business Case (FBC) describes the drivers for change that underpin the move of the EMCHC service from the Glenfield Hospital (GH) to the Leicester Royal Infirmary (LRI). It identifies the capital and revenue required in order to support the relocation of the children's (<19 years of age) element of the EMCHC from the GH to the LRI, whilst ensuring the clinical functionality of the Adult Congenital Heart Disease (ACHD) service, which remains at the GH. These changes are required in order to comply with the Congenital Heart Disease (CHD) standards, as prescribed by NHS England. More detail on these requirements is detailed in section 7 of this document (Clinical Quality Case).

#### 2.2.1 Project Objectives

The objectives of the project, as outlined within the Project Initiation Document (PID) (see appendix 1) and Clinical Operational Policy (see appendix 2), are as follows:

- ▶ To protect the long-term future of the EMCHC by co-locating children's cardiac services with all other children's services to meet national standards and requirements;
- ▶ To integrate the children's EMCHC service with the wider children's hospital, to improve patient experience, increase efficiency and ensure that specialist opinion is on-hand for patients with multiple co-morbidities through the delivery of the required clinical adjacencies. This will result in improved clinical safety, an enhanced patient experience and operational savings;
- ▶ To provide safe, high quality care for children and their families through new models of care, which reflect best practice and improve outcomes and experience;
- ▶ To focus on age-appropriate facilities to improve the environment and experience of Leicester Children's Hospital, for patients, families and visitors;
- ▶ To deliver clinical, operational, workforce and estates solutions for children's cardiac services;
- ▶ To provide the capital and operational solutions which are based on robust activity modelling, to support the development of secondary, tertiary and quaternary children's cardiac services within the context of affordability, while appropriately staffed to meet service needs;
- ▶ To ensure that the changing needs and expectations of a growing population are met in line with Trust clinical strategy and national guidance standards;
- ▶ To provide a solution that is aligned to the Trust's Estate Strategy identified in its Development Control Plan and to allow for future development of the service and site;
- ▶ To develop a strategy to involve charitable fundraising to supplement the UHL internal Capital Resource Limit (CRL), which is funding the majority of the project;

- ▶ To ensure the Children’s Hospital solution aligns to the work of the Better Care Together (BCT) programme, and the Sustainability Transformation Partnership (STP) in the development of models of care and in its engagement with public and key stakeholders;
- ▶ To equip the service to respond effectively to existing and known commissioning requirements, as well as changes in future service direction and demand;
- ▶ To deliver to the agreed timescale and budget, with minimal disruption to the current delivery of the service.

The following SMART (Specific, Measureable, Attainable, Relevant, Timely) objectives arise from these qualitative benefits:

- ▶ The project will deliver the spatial capacity and associated equipment for the children’s congenital heart service to move to the LRI by December 2020. This will align with the models of care and operational strategy that has been developed with the clinical team;
- ▶ The project will deliver the workforce plan and associated recruitment strategy to align with the requirements arising from increased activity, and the move of the service to the LRI site (thus splitting it from the ACHD service);
- ▶ The solution for the project will align with the wider Reconfiguration Programme, and will support the Trust’s clinical strategy by being the first phase to develop a Children’s Hospital in a dedicated building on the LRI site.

**Essential interdependency:** Since the EMCHC project was initiated, the assumptions around theatre usage at the GH have changed. The EMCHC project now vacates essential theatre capacity for the relocation of Hepato Pancreato Biliary (HPB) and Transplant services to the GH, meaning that this is now a key enabler for the Interim ICU project (which moves adult level 3 Intensive Care and associated services off the Leicester General Hospital (LGH) to the GH and the LRI). It also vacates the clinical ward space for the Renal service to move from the LGH to the GH, following the move of the Transplant service.

## 2.3 Strategic and Political Context

This business case, and the associated corporate and project objectives, are supported by a number of significant strategic documents. This section provides an overview of the driving policies and guidance documents that can provide context and support the case for change, in relation to increasing capacity and relocating the congenital heart service.

### 2.3.1 National Strategies, Programmes and Guidance

National programmes and guidance policies which have been consulted through the development of this business case are summarised in the table overleaf.

#### NATIONAL PROGRAMMES AND GUIDANCE DOCUMENTS

##### Health and Social Care Act 2012

The government’s Health and Social Care Bill outlines the future commissioning arrangements across the NHS.

##### NHS Long-Term Plan (2019)

The NHS Long Term Plan details how the NHS will change in order to meet the healthcare needs of the population whilst appreciating the constraints that exist on it, including staffing, funding, inequalities and pressures from a growing and ageing population. The NHS Long Term Plan is drawn up by frontline staff, patients groups, and national experts to be ambitious but realistic.

NATIONAL PROGRAMMES AND GUIDANCE DOCUMENTS	
	Local systems are developing 5 year strategic plans which describe the population needs and case for change in each area, and will then propose practical actions that the system will take to deliver the commitments set out in the NHS Long-Term Plan.
Care Quality Commission	The Care Quality Commission (CQC) implemented 5 domains of quality care to assess provision of care against. These domains are defined as Safety, Effectiveness, Caring, Responsive to people's needs and being a well-led organisation/service. In addition, the CQC have recently implemented an intelligent monitoring approach to give inspectors a clear picture of the areas.
HBN 01-01 Planning and Design Guidance: Cardiac Facilities (April 2013)	HBN 01-01 provides guidance on the facilities required for and to support minor cardiac procedures and cardiac operating theatre suites for inclusion in acute settings, and also guidance that describes spaces that are unique to a catheter laboratory suite. The guidance outlines the emerging principles in planning Cardiac facilities, such as user requirements and their views, location and departmental factors.
HBN 04-02 Planning and Guidance: Critical Care Units (March 2013)	HBN 04-02 provides guidance on critical care units that admit patients whose dependency levels are classified as level 2 or 3 (see 'Comprehensive Critical Care', DH 2000, for definitions of levels of critical care).
HBN 23 Planning and Design Guidance: Designing Hospital Accommodation for Children (January 2004)	HBN 23 describes what form a comprehensive unit would take, and identifies best practice in the built environment from a child-centered perspective. When building a new acute general hospital, project teams should adopt the principle of a "children's hospital within a hospital". The guidance outlines the principles in planning healthcare facilities for children.
Getting the Right Start: National Service Framework for Children (April 2003)	This National Service Framework (NSF) document sets a standard for the care of children and young people when they are in hospital. It covers children from pre-birth to their nineteenth birthday. Healthy children start with healthy mothers, so this NSF also stretches back before birth to include maternity services. It also reaches across the transition into adult life and adult services.
NHS England Congenital Heart Disease standards and specification	The NHS England Congenital Heart Disease (CHD) standards bring together a suite of documents setting out adult and children's standards and service specifications for congenital heart disease services in England, agreed by the NHS England Board on 23 July 2015 and effective from 1 April 2016.
National Institute for Health and Care Excellence (NICE) standards	Numerous documents relating to healthcare for children and young people, including guidance, pathways, advice and quality standards.

Table 18: National Programmes and Guidance

### 2.3.2 Alignment with LLR Sustainability and Transformation Partnership (STP)

The Leicester, Leicestershire and Rutland (LLR) Sustainability and Transformation Partnership (STP) sets out the actions that are needed across the health and care system over the next five years in order to improve health outcomes for patients and ensure our services are safe and high quality within the financial resources available. The STP identifies the essential need for UHL to consolidate acute services onto two sites (LRI and GH) to deliver its clinical reconfiguration strategy, whilst consolidating a number of services at the LGH – namely the Diabetes Centre of Excellence, GP direct access Imaging, and possibly some local GP / urgent access facilities thereby enabling the repurposing of the remainder of the Leicester General Hospital (LGH) site, which will contribute positively to the Trust's financial position.

The UHL Reconfiguration Programme is identified as the LLR STP's top priority for capital expenditure; and whilst we have received positive feedback from NHS Improvement regarding our wave 4 bid for capital funding (submitted in 2018), it is clear that capital will not be readily available in the near future. Further clarity is hoped for when the Comprehensive Spending review is published later this year.

This Full Business Case (FBC) supports the Trust's long-term plan to bring together all children's and maternity services onto the LRI site, as described within the Trust's Clinical Strategy, and reflected in the UHL Development Control Plan (DCP).

This FBC relates to the following schemes which align with the Trust's Clinical Strategy:

- ▶ The transfer of the paediatric (children's) element of the EMCHC from the GH to the LRI site forms the first phase of the Children's Hospital Project. The second phase of this will consolidate all other paediatric services into a dedicated Children's Hospital in the Kensington Building. The capital funding for phase II is identified within the reconfiguration capital requirement.
- ▶ Creating the theatre capacity for the move of the Level 3 Intensive Care and associated services off the LGH to the GH; as well as enabling the move of the Renal service to the GH following the move of the Transplant service.





*Figure 5 Architect Impression of the Children's Hospital following Phase II*

The space required for the congenital heart service to move to the LRI is released by the move of the Gynaecology Assessment Unit (GAU) and Early Pregnancy Assessment Unit (EPAU) to Ward 8, Balmoral Building, LRI. This has been approved as a separate business case since it aligns with the long-term vision for all Gynaecology services to move in to the Balmoral Building to co-locate with other surgical specialties. The capital funding to move the rest of Gynaecology to the LRI (co-located with Ward 8) is identified within the wider Reconfiguration capital bid.

Gynaecology moves the GAU and EPAU into the capacity created by the move of the Surgical Assessment Unit from ward 8 into ward 16 of the Balmoral Building, as a part of the Interim ICU Project in September 2019.

The following diagram explains this series of ward moves and interdependencies:

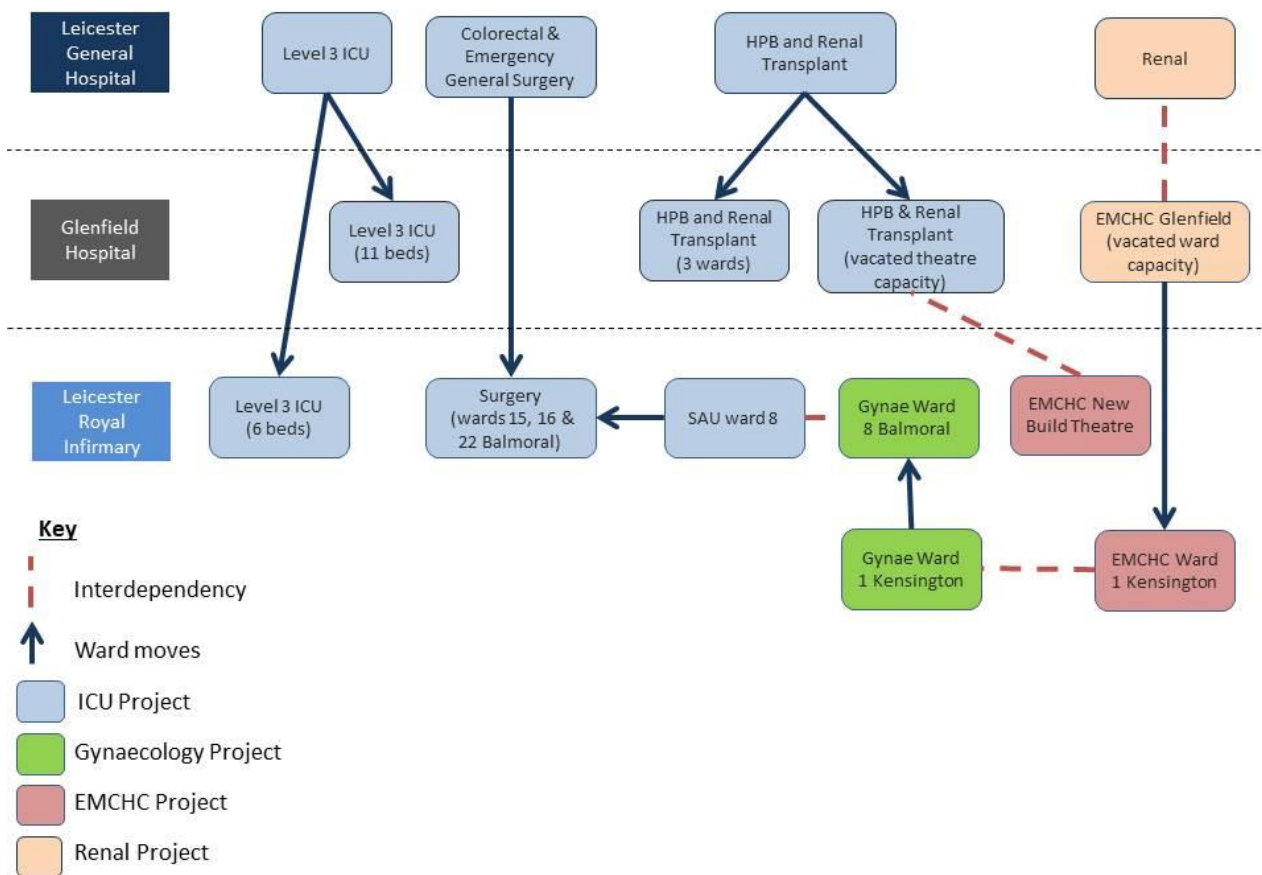


Figure 6 ICU, Gynaecology and EMCHC Ward Moves and Interdependencies

The EMCHC scheme is a key enabler for the long-term plan, and allows the EMCHC to meet the requirements set out in the NHS England Congenital Heart Disease standards, therefore securing the future of the EMCHC service.

### 2.3.3 Trust Vision and Strategic Objectives

UHL set out the objective to create a clinically and financially sustainable Trust with the right clinical services on the right sites in support of our ultimate goal – to deliver ‘Caring at its Best’ for every patient, every time. The Trust will build on its strengths in specialised services, research and teaching; offer faster access to high quality care, develop our staff and improve patient experience.

The Trust recognises the challenges facing the organisation and the LLR health and social care system which are the consequence of significant internal and external challenges which include:

- ▶ Financial pressures facing public sector organisations
- ▶ Rigorous regulation of healthcare providers
- ▶ Changes in the wider health and political landscape
- ▶ Focus on choice and greater patient and community involvement



- ▶ Inherent inefficiency of current configuration
- ▶ Fiscal drag of aging estate reflecting incremental development

Leicester's Hospitals have many strengths; notably, a highly committed and caring workforce and a wide range of clinically excellent services. We also have a very large critical mass, having one of the largest catchment populations of any trust in the NHS. Despite these inherent strengths, we have struggled to achieve and, in particular, to maintain high standards of performance, whether that be in respect of quality, operational performance or our finances. Rather, we are characterised by many pockets of excellence and sometimes improved performance which is then not sustained. Hence we have been judged by the Care Quality Commission (CQC) as "Requires Improvement" in two successive inspections. To move us closer to our goal of 'Becoming the best', the Trust has developed, and is in the process of implementing, the **UHL Quality Strategy**.

### UHL Quality Strategy – Becoming the best

The purpose of this strategy is to facilitate progress towards our ultimate goal - to deliver "Caring at its Best" to every patient, every time. It provides a framework for conversations across the organisation; those conversations will be important so as to harness the collective expertise of the people in our organisation and to avoid a sense of imposition. Our work thus far has identified six core elements which will frame the conversations. The six elements are:

- ▶ Understanding what is happening in our services;
- ▶ Clear priorities and plans for improvement;
- ▶ Embedding an empowered culture of high quality care (including patient empowerment);
- ▶ The right kind of leadership;
- ▶ Giving people the skills to enable improvement;
- ▶ Working effectively with the wider system.

The Trust's 12 priorities have been developed using this approach with strong support from our patient partners, stakeholders, staff and system partners, and has led to the development of the UHL Quality Strategy.

The following diagram demonstrates the quality strategy, and the interrelationships between each element of this:



Figure 7 UHL Quality Strategy

One of the 12 priorities is the progression of our estates and reconfiguration plans - this business case formulates part of these plans but will also support our quality priorities of 'Better care pathways' and 'safer surgery and procedures'.

### 2.3.4 Organisational Overview & Background

UHL is one of the biggest and busiest NHS Trusts in the country, serving the population of Leicester, Leicestershire and Rutland (approx. population 1.02 million) – and increasingly specialist services to a much wider area. The Trust provides nationally and internationally-renowned specialist treatment and services in cardio-respiratory diseases, extracorporeal membrane oxygenation (ECMO), cancer, vascular and renal disorders to reach a further two to three million patients from the rest of the country.

The Trust works closely with partners at the University of Leicester and De Montfort University providing world-class teaching to nurture and develop the next generation of doctors, nurses and other healthcare professionals, many of whom go on to spend their working lives with the Trust.

### 2.3.5 Clinical Management

UHL clinical management is structured into Clinical Management Groups (CMGs).

The seven CMGs are as follows:

- ▶ **CHUGGS** Cancer, Haematology, Urology, Gastroenterology & General Surgery
- ▶ **ESM** Emergency & Specialist Medicine
- ▶ **CSI** Clinical Support & Imaging

- ▶ **ITAPS** Intensive Care, Theatres, Anaesthesia, Pain & Sleep
- ▶ **MSS** Musculoskeletal & Specialist Surgery
- ▶ **RRCV** Renal, Respiratory, Cardiac & Vascular
- ▶ **W&C** Women's & Children's

Each CMG is led by a triumvirate of Clinical Director, Head of Operations and Head of Nursing; with a management structure below led by specialty Heads of Service, Matrons and General Managers.

### 2.3.6 Activity and Finance

UHL provides mainly hospital based healthcare services to patients across Leicester, Leicestershire and Rutland, as well as specialist services to patients throughout the UK. The Trust actively engages with its key stakeholders and implements NHS policy to improve health services in the local area through a range of formal and informal partnerships.

The main sources of income for the Trust are derived from Clinical Commissioning Groups (CCGs), NHS England, and education and training levies.

UHL's annual operating revenue in 2017/18 was £963.5m and in 2018/19 was £993.8m. In 2017/18, UHL achieved £39.3m against its Cost Improvement Programme (CIP) plan, primarily through improvements in income; reducing the prices paid for goods and services; and workforce savings. A CIP of £51.6m was delivered by the Trust in 2018/19.

### 2.3.7 East Midlands Congenital Heart Centre

The nationally renowned East Midlands Congenital Heart Centre (EMCHC) is co-located at the Glenfield Hospital with the adult Cardiology and Cardiac Surgery department in purpose-built facilities that cater for patients with congenital heart disease from before birth, in childhood and through adulthood. UHL's cardiologists also provide an extended service that enables families to be seen and cared for closer to their homes, in the form of peripheral outpatient clinics in Derby, Nottingham, Kettering, Lincoln, Grantham, Boston, Nuneaton, Peterborough and Mansfield, across the EMCHC network.

The EMCHC is a Level 1 Congenital Heart Disease (CHD) Centre, which means that it is a Specialist Adult Congenital Heart Disease (ACHD) and Children's Surgical Centre, commissioned by NHS England. Some cardiac outpatient and non-specialist cardiology services are locally commissioned by Clinical Commissioning Groups (CCGs). It is a quaternary centre, providing highly specialised care for people with CHD from across the East Midlands region as well as further afield.

The EMCHC service currently contributes circa £8 million benefit to the Trust's Income and Expenditure position per year.

Supporting the CHD service is the nationally-important Extra-Corporeal Membrane Oxygenation (ECMO) service, which provides Level 4 critical care for adults, children and neonates with complex cardiac and respiratory conditions, provided on the Paediatric Intensive Care Unit (PICU). This service was originally pioneered at the Glenfield Hospital. The Children's Medical Emergency Transport (CoMET) team supports the service, making UHL the only UK centre to provide paediatric mobile ECMO, by which the team travel to other centres, stabilise patients on ECMO and then transfer them to appropriate centres for ongoing care.

The EMCHC is staffed by a highly skilled multi-disciplinary team who provide high quality care to all CHD patients who may also have a variety of co-morbidities, and takes both unplanned (emergency) and planned (elective) patients.

The effectiveness of the service was rated as Outstanding by the Care Quality Commission (CQC) when it was last inspected in January 2017, the only service to achieve this rating at the Glenfield Hospital. Ratings of Good were awarded for Safety, Caring, Responsiveness and being Well-led, resulting in an overall rating of Good. The CQC are expected to carry out their next inspection in Summer 2019.

**Ratings for Glenfield Hospital**

	Safe	Effective	Caring	Responsive	Well-led	Overall
Medical care (including older people's care)	Requires improvement ↔ Mar 2018	Good ↔ Mar 2018	Good ↔ Mar 2018	Good ↔ Mar 2018	Requires improvement ↓ Mar 2018	Requires improvement ↓ Mar 2018
Surgery	Requires improvement Jan 2017	Good Jan 2017	Good Jan 2017	Good Jan 2017	Good Jan 2017	Good Jan 2017
Critical care	Good Jan 2017	Good Jan 2017	Good Jan 2017	Good Jan 2017	Good Jan 2017	Good Jan 2017
Services for children and young people	Good Jan 2017	Outstanding Jan 2017	Good Jan 2017	Good Jan 2017	Good Jan 2017	Good Jan 2017
End of life care	Requires improvement Jan 2017	Requires improvement Jan 2017	Good Jan 2017	Good Jan 2017	Requires improvement Jan 2017	Requires improvement Jan 2017
Outpatients and diagnostic imaging	Good Jan 2017	N/A	Good Jan 2017	Requires improvement Jan 2017	Requires improvement Jan 2017	Requires improvement Jan 2017
<b>Overall*</b>	Requires improvement ↔ Mar 2018	Good ↔ Mar 2018	Good ↔ Mar 2018	Good ↔ Mar 2018	Requires improvement ↔ Mar 2018	Requires improvement ↔ Mar 2018

Figure 8: CQC Ratings for the Glenfield Hospital

The charity ‘Heart Link’ (<http://www.heartlink-glenfield.org.uk/>) has supported the service at Glenfield over the last 25 years with donations for equipment, training, refurbishments and staff posts. They put parents and their families at the heart of their fundraising, and have financially contributed to existing parents accommodation (bedrooms, lounge and kitchen) close to the children’s cardiac ward at the GH.

The service is also supported by the charity ‘Keep The Beat’ (<http://www.keepthebeat.co.uk/>), who have fundraised for parents accommodation and facilities close to the Paediatric Intensive Care Unit (PICU), the adolescent space on the children’s cardiac ward, and on expanding the EMCHC network across the region.

### 2.3.8 Consistency with National Standards

In 2014, the New Cardiac Review was published by NHS England, which included a set of national standards to which all Level 1 Congenital Heart Disease (CHD) Centres must comply. A full version of these standards is appended to this Business Case as appendix 3. Amongst other stipulations, these included the requirement for each centre to:

- ▶ Employ at least four congenital cardiac surgeons by 2021;

- ▶ Ensure that each cardiac surgeon carries out a minimum of 125 operations per year, averaged over three years;
- ▶ Ensure that children's cardiac services are co-located with other children's services by April 2019 (this date has since been revised to December 2020, with agreement from NHS England).

In order to meet these standards and the associated increased activity for the children's congenital heart service, there needs to be more physical space, greater operational capacity and the service needs to be re-located to the LRI to sit alongside other children's services. At this stage, the plan to do this formed a part of a wider UHL Children's Hospital Project, which looked to bring together all children's services, including the children's element of the EMCHC, into a defined area on the LRI site.

In July 2016, UHL received a letter from NHS England which advised that they were 'minded to cease commissioning level 1 CHD services' from UHL, with the intention to go to public consultation on the national provision of Congenital Heart Services. The consultation began in February 2017. NHS England recognised the impact that this would have on other children's services, and therefore also commissioned four additional reports into the national provision of Paediatric Intensive Care (PIC), Extra-Corporeal Membrane Oxygenation (ECMO), Paediatric Surgery and Paediatric Critical Care Transport.

UHL appealed against NHS England's stated intention to decommission congenital heart services from the Trust and a far reaching campaign ensued, which gathered support from members of the public, staff, patients and their families, and local MP's and counsellors. The Trust successfully evidenced its plan to increase surgical activity to align with the minimum requirements as well as demonstrating its commitment to relocate the paediatric (children's) element of the EMCHC to the LRI in order to be co-located with children's services. The Trust also identified the capital to support the project within its Capital Resources Limit (CRL). At its National Board meeting on 30<sup>th</sup> November 2017, NHS England reversed its decision to decommission Congenital Heart Services from UHL. This would be dependent on the delivery of UHL's stated growth plan for surgical activity and the achievement of the co-location requirement by the deadline stated. In this context, the project to co-locate the children's heart service with the wider Children's Hospital became a strategic priority for the Trust.

Whilst providing the extra spatial capacity for the increase in cardiac activity and the co-location with children's services, the project aims to identify operational savings through transformation wherever possible. Same site location (and eventual consolidation) of the cardiac intensive care unit (currently at the GH) with the children's intensive care unit (currently at the LRI) will deliver savings through workforce and economies of scale, allow for a more flexible workforce, and deliver a more efficient model of care.

### 2.3.9 Leicester Royal Infirmary Site

Leicester Royal Infirmary (LRI) is the most centrally located of the three UHL hospitals, situated 0.8 miles from the City Centre. The site itself is constrained by the physical boundaries of the road network, flanked by Jarrom Street, Havelock Street, Walnut Street, Aylestone Road and Infirmary Road. Buildings vary in age, with parts of the Grade II listed Victoria Building dating back to 1771, to the completion of the new adult and children's Accident and Emergency Department which was fully opened in May 2018.





Figure 9: Leicester Royal Infirmary

Any development is contingent upon the required estate infrastructure to support developments. A site wide infrastructure review has been undertaken as a part of the development of detailed design for the project and infrastructure requirements are funded through a separate project.

The LRI is a fully operational hospital site, and must remain as such throughout construction. The sequencing and project timetable will be constrained by the need to maintain safe operations at all times. This is detailed in section 6 of this document (the Management Case).

### 2.3.10 Alignment with Carter Efficiency Recommendations

Ensuring the best use of resources is key to delivering clinical and financial sustainability across the LLR. Better Care Together (BCT) plans set out how services can be redesigned and the reconfiguration of acute and community hospitals make the best use of resources.

Lord Carter's report, Operational Productivity and Performance in English NHS acute Hospitals (2015), identified significant unwarranted variation across main resource areas, whilst the Naylor Report asserted the need for estate efficiency, including the release of land for sale. Through the Reconfiguration Programme, UHL have plans to implement the Carter and Naylor recommendations; using the Model Hospital to help identify the opportunities for improved efficiency and reduced expenditure.

UHL Cost Improvement Programme delivery includes plans that are based on benchmarking, analytics and opportunities from national best practice such as Getting It Right First Time.

### 2.3.11 Activity and Capacity Planning Assumptions

The following NHS England Congenital Heart Disease standards identify the minimum levels of activity that the EMCHC service needs to achieve:

- ▶ Standard B9 (L1): Consultant congenital surgery cover must be provided by consultant congenital surgeons providing 24/7 emergency cover. Rotas must be no more frequent than 1 in 4.
- ▶ Standard B10 (L1): Congenital cardiac surgeons must work in teams of at least 4 surgeons, each of whom must be the primary operator in a minimum of 125 congenital heart operations per year (in adults and/or children's), averaged over a three year period.

This gives a minimum requirement of 500 congenital surgical cases per annum, which according to past activity translates to approximately 400 paediatric cases and 100 adult cases. The deadline to achieve these standards is 2021.

NHS England have stated that UHL must achieve the following activity trajectories in order for commissioning to continue without intervention:

Milestone - (No Later Than)	Deliverable	Commissioner action if not delivered
01/04/2018 (2017/18)	Surgical activity at least 375	Surgical activity less than 356
01/04/2019 (2018/19)	Surgical activity at least 403	Surgical activity less than 382
01/04/2020 (2019/20)	Surgical activity at least 435	Surgical activity less than 418
01/04/2021 (2020/21)	Surgical activity at least 471	Surgical activity less than 453
01/04/2022 (2021/22)	Surgical activity at least 500	Surgical activity less than 487

Table 19 NHS England Congenital Heart Disease trajectory

With agreement from the Women's and Children's (W&C) Clinical Management Group (CMG) leads, capacity plans are based on the trajectory stated within the right-hand column of the table above (commissioner action if not delivered). These were felt to be realistic figures to work to, whilst limiting financial exposure if the 'deliverable' targets were assumed but not reached.

## 2.4 Evidence of the Four Key Tests

The four key tests for service change are:

- ▶ Strong public and patient engagement
- ▶ Consistency with current and prospective need for patient choice
- ▶ Support for proposals from clinical commissioners
- ▶ Clear, clinical evidence base

### 2.4.1 Strong Public and Patient Engagement

Stakeholder engagement is a vital part of the project in order to ensure that all needs are met through the delivery process.

Historically the EMCHC has been well supported by the public, patients and the CHD charities Heartlink and Keep the Beat. This was particularly important through the campaign to save the service from being decommissioned. The level of support has been continued through the development of the project to move the children’s service to the LRI.

A patient representative sits on the Children’s Hospital Project Board, working with the Project Manager to ensure Public and Patient Involvement (PPI) is integral to the project. This included a schools engagement plan, in which the patient representative went to local schools to speak to patients about their experiences in the hospital, the hospital environment, and what facilities they think would benefit the project. The patient representative has engaged with patients and families currently using congenital heart disease services at the GH, asking them about the project and then using that feedback to influence the project as it progresses.

The project patient representative has been in attendance at clinical design meetings in order to ensure that the patient is at the forefront of our planning assumptions.

Members of CYCLE (County Youth Council Leicestershire) have been consulted, initially about plans to increase the upper age limit of children’s services from 16 years of age to 18 + 365 days (<19 years of age) (a decision that was made as a part of the wider Children’s Hospital Project), wider Reconfiguration plans and the strategy for children’s and young people’s services in particular.

A full version of the project communications and engagement plan can be found in appendix 4, detailing all public and patient engagement that has been done to date, as well as that planned for the future.

The following stakeholder matrix has been developed for the project:

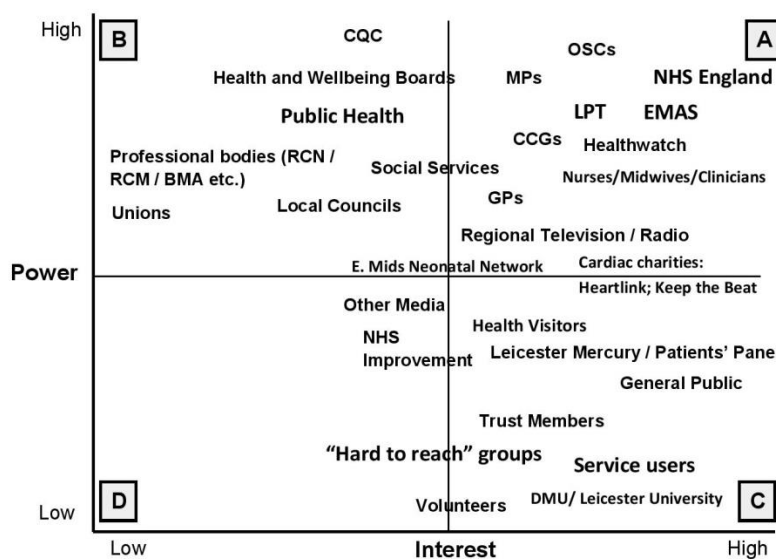


Figure 10 EMCHC Stakeholder Matrix



## 2.4.2 Consistency with Current and Prospective Need for Patient Choice

Patient choice and experience has been at the heart of the planning process. If the project does not progress as planned, congenital heart services at UHL will be decommissioned by NHS England, leaving the East Midlands as the only region in the country without a Level 1 Congenital Heart Centre. This would greatly impact patients needing to use these services as they would have to travel much greater distances in order to access congenital heart services elsewhere. This concern was reflected in the high level of public support that the Trust received when campaigning to keep the service. The campaign itself included a petition that received enough signatures to be presented at 10 Downing Street, numerous demonstration marches through Leicester city centre and a significant online campaign.

The economic case details the financial impact that losing the service would have on patients and society, assuming that the centre that they would be using going forward was a greater distance away from home. This includes costs incurred through additional travel distances, and the financial impact of additional time off work for parents/carers (arising through increased travel distance).

An Equality Impact / Due Regard Assessment has been completed for the project. This identifies that all reasonable adjustments in order to ensure equity have been made, and that there is confidence that the project and its implementation will be non-discriminatory, not damage equality of opportunity, and will support relations with the protected groups listed within the assessment (the groups detailed were race/ethnicity, sex, religion/belief, gender reassignment, sexual orientation including lesbian, gay and transsexual people, age, marriage and civil partnership and disability). A full copy of the Equality Impact/Due Regard Assessment is detailed in appendix 5.

## 2.4.3 Support for Proposals from Clinical Commissioners

The project has been established in order to meet the requirements for Congenital Heart Services arising from the NHS England Paediatric Cardiac Services Specification and Congenital Heart Disease standards. These detailed standards relate to:

- ▶ Section A: The network approach
- ▶ Section B: Staffing and skills
- ▶ Section C: Facilities
- ▶ Section D: Interdependencies
- ▶ Section E: Training and Education
- ▶ Section F: Organisation and Governance
- ▶ Section G: Research
- ▶ Section H: Communication with patients
- ▶ Section I: Transition
- ▶ Section J: Pregnancy and contraception
- ▶ Section K: Fetal diagnosis
- ▶ Section L: Palliative care and bereavement

Although this project is influenced by and aligns with all sections of these standards, it particularly relates to Staffing and Skills, Facilities and Interdependencies.

A full copy of these standards can be found at <https://www.england.nhs.uk/wp-content/uploads/2018/08/Congenital-heart-disease-standards-and-specifications.pdf>

The standards were set by the NHS England national team, and were consulted on as a part of this. Regional specialised commissioners have confirmed support for this project to align with these standards. In addition to this, the Children's Hospital Project Board has representation from NHS England and local Clinical Commissioning Groups (CCG's) to ensure that both commissioner organisations are sighted to and support the plans.

#### 2.4.4 Clear Clinical Evidence Base

The NHS England Congenital Heart Disease standards were developed following a national review of the model of care for patients with congenital heart disease. They were the final outcome of several previous reviews of these services, the first of which was triggered following the tragic failures of children's heart surgery in Bristol in the 1980's. One of the key metrics resulting from this work is the number of surgical procedures a congenital heart surgeon carries out per year, set to ensure that their skills are at the level required for such highly complex procedures.

The requirement to be located on the same hospital site as wider children's services allows consultants from interdependent specialties to provide emergency bedside care in a timely manner.

### 2.5 Benefits Realisation

Work has been undertaken by the Trust to identify and quantify the clinical benefits resulting from this project. These include:

- ▶ **Strategic Fit:** in keeping with the longer term site reconfiguration proposals, acting as an enabler to other service moves and relocation. Enables the co-location of services that supports evidence based practice, innovation in developing new models of care and provides a seamless service to adults and children. Supports the longer term vision for all children's services to be located in a dedicated building on the LRI site.
- ▶ **Clinical Quality and Patient Safety:** swift access to paediatric consultants from other specialties, immediate diagnostic support and the visibility of patients will enhance patient safety and improve quality of care.
- ▶ **Patient Outcomes:** continued excellent clinical outcomes supported by the protection of existing processes - EMCHC has some of the best surgical outcomes in the country.
- ▶ **Patient Experience:** responsive no delays system in a dedicated bespoke environment will improve patient experience. The environment will enhance privacy and dignity and will reflect the needs of children and their families.
- ▶ **Clinical Staff & Resources:** improved patient flow including emergency pathway, proximity of services and an environment tailored to meet demand will increase staff satisfaction, improve morale and help to mitigate stress. Reduced sickness absence levels with higher rates of recruitment and retention as the future of the EMCHC is secured through delivery of the project.

The post project evaluation process is detailed within section 6 of this business case. A full version of the Benefits Realisation Plan can be found in appendix 25.

## 2.6 Risks, Constraints and Interdependencies

### 2.6.1 Key Strategic Risks

Strategically, this project is a top priority for UHL. The service is high profile and the project is well supported politically and amongst the local and wider population. A Risk Potential Assessment (RPA) was completed and signed off by the Children’s Hospital Project Board on 18<sup>th</sup> April 2019, which assessed this as a medium complexity project in terms of its strategic profile, as shown in the following table:

B1 Strategic Profile		Very Low	Low	Med	High	Very High	
B1.1. Political	No political involvement or does not require any special handling or additional engagement.						Multiple political interests requiring handling. Political agenda changing, unclear direction or increasing opposition. External political interests involved.
Explanatory Notes	High profile service; national procurement; CHD standards; High public profile; specialist service; large impact on UHL if decommissioned (likely to result in 'ripple effect' service loss through paediatrics); full support from local MP's. This project has been through intense political interrogation over the past 7 years, and no further political intervention is currently needed.						
B1.2. Public	No or very low public profile. No change in public interest or service provision. No interest from external pressure groups.						Very high public profile, significant interest from public and/or from active pressure groups/media. Complex external communications.
Explanatory Notes	Owing to the history, and the active public participation in UHL being successful in its bid to continue to manage this service; there is no risk for the public of this change (unless UHL loses the service). Non-delivery of the project would have a high political and public impact.						
B1.3. Business performance	No significant change to the organisation’s business. No change to the operation of external bodies.						Very high business performance profile. Changing demands or expectations of performance or staff or behaviours. Significant changes to consumer or business operations.
Explanatory Notes	The move of the EMCHC service to the LRI will require an assessment of patient flows and staffing infrastructure with the direct EMCHC workforce, but also the supporting services since adult and children’s congenital services will be separated. The new facilities will provide the capacity to meet the future activity profile.						
B1.4. Organisational	No links to strategic targets or published						Critical link to delivery of key strategic objectives

objectives	performance indicators. Strategic status (portfolio position), mandate and objectives clear, stable and unlikely to change.						and/or published targets. Strategic status, mandate or objectives likely to change.
Explanatory Notes	The move of the EMCHC service is a top strategic priority for UHL.						

Table 20 Risk Potential Assessment Strategic Profile

A full version of the RPA can be found in appendix 6.

All project risks are managed by the project team, who review the project risk register on a bi-monthly basis. Risks and issues arising between these meetings are managed by the Reconfiguration Project Manager, who escalates these to the CMG, Children’s Hospital Project Board and the Reconfiguration Programme Board. A full version of the project risk register is detailed in appendix 7.

The highest rated risks (those with a RAG rating of 12 or higher) are identified in the following table.

Risk Category	Risk	Consequences	Likelihood	Consequence	Current RAG	Risk Mitigations	Target RAG	Risk Owner	Executive Lead
Business Case and Project Delivery Risk 3	There is a risk of slippage in timescales for delivery of the EMCHC project(s), due to the delay in availability of internal capital as a result of competing pressures on Trust CRL	Programme delay; Delivery of cardiac service at the LRI does not meet NHSE deadline, putting the service at risk	3	4	12	Continued engagement with Director of Operational Finance and continued project exposure at Capital Monitoring and Investment Committee (CMIC); use of charitable funding to supplement CRL; Ongoing engagement with NHS England regarding progression against programme and risk of delay	6	Nicky Topham / Alex Morrell	Mark Wightman
Clinical Risk 1	There is a risk that the quality of the project is compromised due to the challenging capital budget	Post FBC design decisions are not to the specification that would be desirable and cannot meet the expectations of the clinical team	4	3	12	Budget management; management of expectations; clinical engagement throughout the design development post FBC	6	Alex Morrell & Aidan Bolger	Mark Wightman & Ian Scudamore

Risk Category	Risk	Consequences	Likelihood	Consequence	Current RAG	Risk Mitigations	Target RAG	Risk Owner	Executive Lead
Estates 2	There is a risk that the interdependencies between reconfiguration projects impact on the programme for the EMCHC project and availability of space to allow decant. This includes delay to the ICU project which vacates space for GAU/EPAU; or if space cannot be identified to clear L5 Kensington or some of the moves required to move the Colposcopy / Hysteroscopy service	Delay to project programme; Potential increased capital costs to ensure solution is found	3	4	12	Master programme developed showing critical path dependencies; continued engagement with space utilisation team and reconfiguration board; Escalation of issues to Project Boards and Reconfiguration Board	4	Gillian Cairns & Alex Morrell	Darryn Kerr & Nicky Topham
Estates 5	There is a risk of scope creep due to change of clinical personnel; change of clinical requirements; undefined brief; progression of clinical engagement	Delay in project or increased capital costs	3	4	12	Plans, C-sheets and schedule of equipment signed off by clinical leads; any changes subject to Project Board approval and must be supported by change control governance to identify financial, operational or time impact of proposed change; use of contingency if appropriate	4	Gillian Cairns	Darryn Kerr

Risk Category	Risk	Consequences	Likelihood	Consequence	Current RAG	Risk Mitigations	Target RAG	Risk Owner	Executive Lead
Estates 7	There is a risk that despite the development of a construction delivery plan, there will be delays due to the close proximity of construction work to a live clinical environment	Programme delay; resultant delay damages	4	3	12	Use of Government Soft Landings methodology to develop construction programme; escalation policy for stoppages; allowance for float within the programme; communications plan; close engagement with clinical and management leads of affected areas	4	Sue McLeod & Gillian Cairns	Darryn Kerr
Estates 9	There is a risk that there is inadequate contingency allowed for within the project cost plan – the allowance for contingency has been set low in order to ensure that the business case meets the capital budget	Project scope is reduced as capital runs out before the end of the project; negative impact on clinical environment and availability of equipment	3	4	12	Strong change control management by Estates and Reconfiguration PM's and Project Board of any changes that can be mitigated or managed	8	Gillian Cairns	Darryn Kerr



Risk Category	Risk	Consequences	Likelihood	Consequence	Current RAG	Risk Mitigations	Target RAG	Risk Owner	Executive Lead
Workforce 2	Trust may fail to acquire appropriately skilled staff to work in the new facility due to lack of qualified staff in the market	EMCHC is under-staffed and cannot deliver desired quality of care; increased premium spend on staff; beds close; cannot meet minimum levels of surgical activity	3	4	12	Develop solution with excellent high quality facilities and access to attract people to work at UHL - include flexible working hours, career development, diversity of role - sell new building in positive way, innovative etc etc; work with local institutions to develop new roles (e.g. physician associate, nurse associate); development of deliverable recruitment plan	6	Sue McLeod / Elizabeth Stirzaker	Rebecca Brown
Equipment 2	There is a risk of scope creep in items of agreed equipment due to change of clinical personnel; change of clinical requirements; undefined brief; progression of clinical engagement	Delay in project or increased capital costs	3	4	12	C-sheets and schedule of equipment signed off by clinical leads; any changes subject to Project Board approval and must be supported by change control governance to identify financial, operational or time impact of proposed change; use of contingency if appropriate	2	Gillian Cairns	Darryn Kerr

Risk Category	Risk	Consequences	Likelihood	Consequence	Current RAG	Risk Mitigations	Target RAG	Risk Owner	Executive Lead
IT 3	There is a risk that the IT requirements for the project are not affordable within the project budget due to challenging capital budget	Project is unaffordable, scope of IT equipment and infrastructure is reduced	3	4	12	Contingency within the cost plan; continued value engineering; fully worked up IT plan	8	Zoe Bliss	Andy Carruthers
Reconfiguration 2	There is a risk that the Gynae and Level 5 Kensington projects cannot be completed to programme or budget due to the delay to progression of the works required to Gynae and Level 5 Kensington, which are needed for the EMCHC project to progress	Delay to EMCHC project, impeding our ability to meet the NHSE co-location deadline	4	4	16	Continued engagement with clinical areas affected by the project, appropriate resourcing of these areas of the project; value engineering of designs; escalation of capital risks	3	Gillian Cairns & Alex Morrell	Nicky Topham & Paul Traynor
Reconfiguration 4	There is a risk that inadequate space for offices (EMCHC and enabling) is found in close enough proximity to the clinical areas due to Lack of space at the LRI	Delay to the EMCHC and Enabling projects programme	3	5	15	Management through the DCP team, Project Boards and Reconfiguration Board; Close working with the CMG management teams to manage expectations; exploring alternative opportunities for delivery of space	3	Alex Morrell & Gillian Cairns	Nicky Topham & Darryn Kerr

Table 21 Project Risk Register - highest rated risks

## 2.6.2 Constraints and Interdependencies

### Constraints

The key constraints for the EMCHC Project are:

<b>Capital Cost</b>	The project must be delivered with a capital budget of £14.17million.
<b>Timing</b>	The Children's Congenital Heart Service must move to the same site as other children's services by December 2020, as agreed with NHS England.
<b>Revenue Cost</b>	The project must create efficiencies to deliver a scheme that is affordable to the Trust.
<b>Space</b>	The LRI site has limited expansion capacity – the solution is constrained by the existing site.
<b>Interdependency with the Children's Hospital Project</b>	The cardiac facility must provide integration and avoidance of duplication with the wider Children's Hospital, both before (models of care) and after delivery of the wider Children's Hospital Project.
<b>Operational Issues</b>	The project needs to be delivered irrespective of day to day service delivery; within minimum negative impact on patients' experiences.
<b>Communications</b>	There will need to be a public engagement plan to fully engage with services users, interested parties and members of the public.
<b>Project Resource</b>	The project needs to be appropriately resourced, recognising there is limited time for the clinical and managerial workforce to support the project fully due to pressured clinical and operational agenda.

*Table 22 Project Constraints*

### Interdependencies

The EMCHC Co-location Project has the following dependencies and interdependencies:

- ▶ Interface with the UHL Development Control Plan (DCP);
- ▶ Alignment to the Better Care Together Programme/Sustainability Transformation Plan (STP);
- ▶ Essential enabler / Interdependency with the ICU and associated services project to vacate theatre capacity and ward space at the GH. HPB and Transplant cannot move to the GH until the EMCHC service has moved to the LRI;

- ▶ Interdependency with the ICU project, which will vacate ward 8 for the Gynaecology Assessment Unit, GAU, and Early Pregnancy Assessment Unit, EPAU, thereby vacating capacity in the Jarvis Building for Gynaecology outpatients
- ▶ Dependency on Leicester City Council approving the planning application;
- ▶ Dependency on the infrastructure project to support the needs of the EMCHC, particularly the complex infrastructure and essential power required for the PICU and ECMO service;
- ▶ Identification of capital funding within the Trust Capital Resources Limit (CRL), and that the capital is available at the time it is required.

## 3 | The Economic Case

### 3.1 Introduction

In accordance with the Capital Investment Manual and requirements of Her Majesty's Treasury's Green Book (A Guide to Investment Appraisal in the Public Sector), this section of the combined Outline Business Case (OBC) and Full Business Case (FBC) describes the options for delivering the required facilities for the East Midlands Congenital Heart Centre (EMCHC) at the Leicester Royal Infirmary (LRI).

### 3.2 Options development

#### 3.2.1 Critical Success Factors

The project critical success factors align with the SMART (Specific, Measurable, Attainable, Realistic, Timely) objectives, as follows:

- ▶ The project will deliver the spatial capacity and associated equipment for the paediatric congenital heart service to move to the LRI by December 2020. This will align with the models of care and operational strategy that has been developed with the clinical team;
- ▶ The project will deliver the workforce plan and associated recruitment strategy to align with the requirements arising from increased activity, and the move of the service to the LRI site (thus splitting it from the ACHD service);
- ▶ The solution for the project will align with the wider Reconfiguration Programme, and will support the Trust's clinical strategy by being the first phase to develop a Children's Hospital in a dedicated building on the LRI site.

#### 3.2.2 Weighted Benefit Criteria

A set of benefit criteria based on the critical success factors (SMART objectives), vision and core principles of the project was initially compiled in January 2016. Weightings were agreed in order to prioritise key benefits and these were signed off by the Children's Hospital Project Board.

In August 2018, the benefit criteria were updated to include an additional benefit with associated weighting. This was Section 2 (Reconfiguration and Capacity Planning), which received a 20% weighting, in order to ensure that plans for the EMCHC and Children's Hospital align with the Development Control Plan (DCP), which had been substantially progressed since the agreement of the initial set of benefit criteria.

The weighted benefit criteria were reviewed again at the start of the options appraisal workshop, with minor amendments made to the wording of benefits. The following table details the final version of the weighted benefit criteria:

	Detailed Benefit Criteria	Weighting
<b>1</b>	<b>Clinical Quality, Safety, Configuration and Choice</b> Enables the provision of safe, sustainable, high quality services in line with national guidance, standards and frameworks	
1.1	Provides a configuration of services that maximises the required service adjacencies and optimises the patient journey, which: <ul style="list-style-type: none"> <li>▶ Minimises clinical risk</li> <li>▶ Delivers safe and sustainable, high quality services</li> <li>▶ Enhances the overall patient experience</li> </ul>	9
1.2	Ensure the delivery of services in line with national guidance, standards and frameworks	10
1.3	Takes into account demography and deprivation	3
1.4	Delivery of EMCHC in the agreed timeframe	4
1.5	Improve and reinforce the reputation of Leicester Children's Hospital, to ensure it remains a key part of tertiary and quaternary networks	4
	<b>Weighted Sub Total</b>	<b>30</b>
<b>2</b>	<b>Reconfiguration and Capacity Planning</b> Delivery of the individual project without disrupting wider clinical reconfiguration and capacity plans	
2.1	Aligns with the Development Control Plan, and progression of the Reconfiguration Programme	8
2.2	Vacates space to create capacity for winter bed planning and growth across the Trust	7
2.3	Physical deliverability of the project	5
	<b>Weighted Sub Total</b>	<b>20</b>
<b>3</b>	<b>Quality of Patient Environment</b> The provision of an environment that maximises the provision of high quality services	
3.1	Age appropriate facilities	7
3.2	Co-location of services to improve patient pathway through hospital, aiming for a 'one-stop shop' wherever possible	4
3.3	Optimises patient dignity and privacy	2
3.4	Service has a defined identity	2
	<b>Weighted Sub Total</b>	<b>15</b>
<b>4</b>	<b>Efficiency and Service Effectiveness</b> Ensures a more efficient and effective service with consideration of the use of resources and workforce	
4.1	Co-location of services to optimise use of resources and create an efficient workforce through achievement of critical adjacencies (PICU, theatres, ED, diagnostics, etc.) to realise economies of scale	4

	Detailed Benefit Criteria	Weighting
4.2	Delivers an acceptable transitional strategy that maintains service capacity, patient accessibility and minimises disruption during implementation	3
4.3	Improvement in recruitment and retention of workforce	8
	<b>Weighted Sub Total</b>	<b>15</b>
<b>5</b>	<b>Training, Education and Research</b> Maintains and enhances education, training and research	
5.1	Ensure up-to-date training and education facilities are provided to attract and maintain the best workforce	6
5.2	Research facilities through collaboration with academic partners	4
	<b>Weighted Sub Total</b>	<b>10</b>
<b>6</b>	<b>Flexibility</b> The extent to which the development of the service has the capability to respond to changes in clinical practice, activity and service delivery changes	
6.1	Allows expansion/contraction of service to meet national guidance, service demands and changes in technology	3
6.2	Generic approach wherever possible in consideration of space	2
	<b>Weighted Sub Total</b>	<b>5</b>
<b>7</b>	<b>Accessibility</b> The ease of external access to facilities and one on site, to the services provided	
7.1	Single front door for all children's services, providing safe and easy access through the building	3
7.2	Improvement of access to Children's services and infrastructure to meet the needs of a diverse population	2
	<b>Weighted Sub Total</b>	<b>5</b>
	<b>Overall Total</b>	<b>100</b>

Table 23 Weighted Benefit Criteria

### 3.2.3 Long List of Options

A long list of options for the East Midlands Congenital Heart Centre was developed by the Reconfiguration Team. These are summarised in the table below:

Description	
<b>Option 1</b>	East Midlands Congenital Heart Centre on Knighton Street Campus (Knighton Street Outpatients and Offices) at the LRI – new build
<b>Option 2</b>	Kensington Option: East Midlands Congenital Heart Centre in Kensington Building at the LRI - new build and refurbishment



<b>Option 3</b>	Balmoral Option: East Midlands Congenital Heart Centre in Balmoral Building at the LRI – new build and refurbishment
<b>Option 4</b>	Children’s Hospital (including East Midlands Congenital Heart Centre) at the Glenfield Hospital – new build and refurbishment
<b>Option 5</b>	Do Minimum: Space swaps between children’s wards at the GH and the LRI in order to achieve the co-location standard – new build and refurbishment
<b>Option 6</b>	Do Nothing (Business As Usual, BAU): EMCHC remains at the Glenfield Hospital, the rest of the paediatric service remains at the LRI <b>Level 1 Congenital Heart Disease services are decommissioned from UHL</b>

Table 24 Long List of Options - summary

### 3.2.4 Long to Short List Appraisal

The long to short list options appraisal was carried out on the 20<sup>th</sup> August 2018 by the following members of the Children’s Hospital Project Team:

Name	Title
<b>Tim Pearce</b>	Major Projects Finance Lead
<b>Dan Barley</b>	Head of Finance, W&C CMG
<b>Alex Morrell</b>	Senior Reconfiguration Project Manager
<b>Nicky Topham</b>	Reconfiguration Programme Director

Table 25 Long to Short List Options Appraisal Attendees

A detailed description of the long list of options is as follows:

Long List of Options	
<b>1</b>	<b>East Midlands Congenital Heart Centre on Knighton Street campus at the LRI – new build</b>
<b>2</b>	<p><b>Kensington option: East Midlands Congenital Heart Centre in Kensington Building at the LRI – new build and refurbishment</b>  <b>Associated moves (Gynaecology, Level 5 Kensington)</b></p> <p>Level 0 Kensington Building</p> <ul style="list-style-type: none"> <li>• New build extension for paediatric cardiac physiology;</li> <li>• Refurbishment of existing gynaecology outpatients into paediatric cardiac outpatients.</li> </ul> <p>Ward 1, Level 1 Kensington Building</p> <ul style="list-style-type: none"> <li>• New build extension for cardiac theatre and cath lab suite;</li> <li>• Refurbishment of existing Gynaecology Assessment Unit (GAU) into paediatric cardiac ward and parents’ accommodation.</li> </ul> <p>Level 5 Kensington Building</p> <ul style="list-style-type: none"> <li>• Conversion and refurbishment of neonatal consultants offices, medical secretary office, seminar room, CoMET and CenTre transport team accommodation and storage into: <ul style="list-style-type: none"> <li>• 12 bed Paediatric Intensive Care Unit (PICU) and associated support space;</li> </ul> </li> </ul>

<b>Long List of Options</b>	
	<p>Ground Floor Jarvis Building</p> <ul style="list-style-type: none"> <li>• Refurbishment of Early Pregnancy Assessment Unit (EPAU) into Gynaecology Outpatients</li> </ul> <p>Ward 8, Level 3 Balmoral Building</p> <ul style="list-style-type: none"> <li>• Refurbishment of Surgical Assessment Unit (SAU) into combined GAU and EPAU.</li> </ul> <p>Jarvis Building</p> <ul style="list-style-type: none"> <li>• Conversion of space to house existing L5 accommodation</li> </ul> <p>LGH</p> <ul style="list-style-type: none"> <li>• Refurbishment of space adjacent to Gynaecology Services Unit (GSU) to transfer Colposcopy and Hysteroscopy service from LRI</li> </ul>
<b>3</b>	<p><b>Balmoral Option: East Midlands Congenital Heart Centre in Balmoral Building at the LRI – new build and refurbishment</b></p> <p>Associated moves (Kinmonth Unit, Surgical Specialties Ward, Winter Pressures Adult Medical Ward, Chief Executive corridor)</p> <p>Level 2 Balmoral Building</p> <ul style="list-style-type: none"> <li>• New build extension adjacent to the Central Operating Department (COD) for cardiac theatre and cath lab suite;</li> </ul> <p>Level 3 Balmoral Building</p> <ul style="list-style-type: none"> <li>• Conversion and refurbishment of existing accommodation to create: <ul style="list-style-type: none"> <li>• Paediatric cardiac ward (existing Ward 7);</li> <li>• 20-bed PICU (existing Kinmonth Unit);</li> <li>• Paediatric Cardiac Outpatient and Physiology Department (existing Chief Executive corridor);</li> <li>• Parents Accommodation and Admin support space (existing Ward 9).</li> </ul> </li> </ul> <p>TBC</p> <ul style="list-style-type: none"> <li>• Conversion and refurbishment of existing accommodation to create: <ul style="list-style-type: none"> <li>• 18 bed re-provision of Kinmonth Unit;</li> <li>• Surgical Specialties Ward</li> <li>• Winter Pressures Adult Medical Ward</li> <li>• Admin accommodation to house Chief Exec corridor staff.</li> </ul> </li> </ul>
<b>4</b>	<p><b>Children’s Hospital (including East Midlands Congenital Heart Centre) at the Glenfield Hospital: new build and refurbishment</b></p> <p><b>Associated moves: TBC</b></p> <p>Conversion, refurbishment and new build accommodation at the Glenfield Hospital to create:</p> <ul style="list-style-type: none"> <li>• Consolidated PICU;</li> <li>• Paediatric inpatient wards</li> <li>• Paediatric outpatient and daycase department</li> <li>• Paediatric imaging and diagnostic department</li> <li>• Paediatric theatre department</li> <li>• Admin, education and research</li> </ul>
<b>5</b>	<p><b>Do Minimum: Space swaps between children’s wards at the GH and</b></p>

Long List of Options	
	<p><b>the LRI in order to achieve the co-location standard: new build and refurbishment</b></p> <p>Balmoral/Windsor, LRI and Level 1 Glenfield:</p> <ul style="list-style-type: none"> <li>• Ward swap between the paediatric cardiac ward (GH) with ward 11 (paediatric medicine);</li> <li>• Conversion and refurbishment of part of existing ward 14 to extend existing PICU;</li> <li>• Swap of paediatric outpatient space at LRI with cardiac outpatient space at GH.</li> </ul> <p>Level 2 Balmoral Building, LRI:</p> <ul style="list-style-type: none"> <li>• New build extension adjacent to the Central Operating Department (COD) for Cardiac Theatre and Cath Lab suite.</li> </ul>
6	<p><b>Do Nothing (Business As Usual, BAU): EMCHC remains at the Glenfield Hospital</b></p> <ul style="list-style-type: none"> <li>• <b>Level 1 Congenital Heart Disease services are decommissioned from UHL</b></li> </ul>

Table 26 Long List of Options - detailed

At the long to short list options appraisal, the following options were discounted, as they were deemed to be either unaffordable, not deliverable in the agreed timeframe or not aligned to the Trust's clinical strategy:

- ▶ Option 1: New Build EMCHC on the Knighton Street campus, LRI – not deliverable within the capital budget and timescales for co-location
- ▶ Option 4: New Build and Refurbished Children's Hospital at the Glenfield – would not deliver paediatric services on same site as Children's Emergency Department (ED), not deliverable within the capital budget, does not align with the clinical strategy to deliver all paediatric services at the LRI
- ▶ Option 5: Do Minimum (Paediatric service space swaps to achieve co-location standards) – does not achieve long-term vision for a single site Children's Hospital, sub-optimal clinical adjacencies for affected clinical services

### 3.2.5 Short List of Options

The long to short list options appraisal resulted in the identification of the following short list of options:

Short List of Options	
2	<p><b>Kensington option:</b> East Midlands Congenital Heart Centre in Kensington Building at the LRI – new build and refurbishment</p> <p>Associated moves (Gynaecology, Level 5 Kensington)</p>
3	<p><b>Balmoral Option:</b> East Midlands Congenital Heart Centre in Balmoral Building at the LRI – new build and refurbishment</p>
6	<p><b>Do Nothing (Business As Usual, BAU):</b> EMCHC remains at the Glenfield Hospital (this option assumes that Level 1 Congenital Heart Disease services are decommissioned from UHL)</p>

Table 27 Short List of Options

### 3.3 Non-Financial Options Appraisal

Options 2 & 3 were progressed to the Options Appraisal workshop, where the Children's Hospital Project Board (listed below) discussed and critically scored each option against the weighted benefit criteria. The Do Nothing / Business As Usual option was kept as a comparator within the scoring process.

Name	Title
Alex Morrell	Senior Reconfiguration Project Manager
Nicky Topham	Reconfiguration Programme Director
Arthur Palin	Reconfiguration Team Intern
Tim Pearce	Major Projects Finance Lead
Justin Hammond	Head of UHL Reconfiguration PMO
Louise Gallagher	Workforce Development Manager
Steve Gulliver	Senior OD and Improvement Manager
Tim Diggle	Head Of Leicester Hospitals Charity
Aidan Bolger	Consultant Adult Congenital Heart Disease
Leigh Gates	Senior Capital Projects Manager
Jo Ennis	Matron PICU
Stephanie Tate	Patient Partner
Jude Bowler	Senior Service Specialist NHSE
Mark Wightman	Director of Strategy and Communications, Project SRO
Chris Wighton	Consultant Paediatrician
Sam Little	Children's and Maternity Commissioning Manager (CCG's)
Zoe Bliss	IM&T Business Engagement Lead

*Table 28 Options Appraisal Workshop Attendees*

The criteria for the options appraisal and their weighting was assessed and agreed by the Children's Hospital Project Board as detailed in table 27.

Each option on the short list was discussed, appraised and objectively scored. The 'Do Nothing' option was included as a baseline within the scoring process, to ensure options were properly evaluated. Scoring was on a scale from 0-5 as depicted below:

Score	Description
0	Unacceptable
1	Poor
2	Adequate
3	Good
4	Very Good

*Table 29 Scoring Table*

It is important to note that the Children's Hospital Project Phase I (EMCHC Co-location) was appraised in the context of the wider Children's Hospital Project Phase II (the consolidation and co-location of all children's services into a defined children's hospital). The table below identifies the outcome of the scoring process:

	Detailed Benefit Criteria	Weighting	Do nothing (BAU) Option 6	Kensington Option 2	Balmoral Option 3
<b>1</b>	<b>Clinical Quality, Safety, Configuration and Choice</b>				
	Enables the provision of safe, sustainable, high quality services in line with national guidance, standards and frameworks				
1.1	Provides a configuration of services that maximises the required service adjacencies and optimises the patient journey, which:	9	0	4	2
	<ul style="list-style-type: none"> <li>Minimises clinical risk</li> </ul>				
	<ul style="list-style-type: none"> <li>Delivers safe and sustainable, high quality services</li> <li>Enhances the overall patient experience</li> </ul>				
1.2	Ensure the delivery of services in line with national guidance, standards and frameworks	10	0	5	3
1.3	Takes into account demography and deprivation	3	1	5	4
1.4	Delivery of EMCHC in the agreed timeframe	4	0	3	3
1.5	Improve and reinforce the reputation of Leicester Children's Hospital, to ensure it remains a key part of tertiary and quaternary networks	4	0	4	1
	<b>Weighted Sub Total</b>	<b>30</b>	<b>3</b>	<b>129</b>	<b>76</b>
<b>2</b>	<b>Reconfiguration and Capacity Planning</b>				
	Delivery of the individual project without disrupting wider clinical reconfiguration and capacity plans				
2.1	Aligns with the Development Control Plan, and progression of the Reconfiguration Programme	8	2	5	1
2.2	Vacates space to create capacity for winter bed planning and growth across the Trust	7	3	4	0
2.3	Physical deliverability of the project	5	5	3	3
	<b>Weighted Sub Total</b>	<b>20</b>	<b>62</b>	<b>83</b>	<b>23</b>
<b>3</b>	<b>Quality of Patient Environment</b>				
	The provision of an environment that maximises the provision of high quality services				
3.1	Age appropriate facilities	7	0	4	2
3.2	Co-location of services to improve patient pathway through hospital, aiming for a 'one-stop shop' wherever possible	4	0	4	2

3.3	Optimises patient dignity and privacy	2	2	5	2
3.4	Service has a defined identity	2	0	4	2
	<b>Weighted Sub Total</b>	<b>15</b>	<b>4</b>	<b>62</b>	<b>30</b>
<b>4</b>	<b>Efficiency and Service Effectiveness</b> Ensures a more efficient and effective service with consideration of the use of resources and workforce				
4.1	Co-location of services to optimise use of resources and create an efficient workforce through achievement of critical adjacencies (PICU, theatres, ED, diagnostics, etc.) to realise economies of scale	4	1	4	3
4.2	Delivers an acceptable transitional strategy that maintains service capacity, patient accessibility and minimises disruption during implementation	3	1	3	4
4.3	Improvement in recruitment and retention of workforce	8	0	4	1
	<b>Weighted Sub Total</b>	<b>15</b>	<b>7</b>	<b>57</b>	<b>32</b>
<b>5</b>	<b>Training, Education and Research</b> Maintains and enhances education, training and research				
5.1	Ensure up-to-date training and education facilities are provided to attract and maintain the best workforce	6	1	3	2
5.2	Research facilities through collaboration with academic partners	4	0	3	2
	<b>Weighted Sub Total</b>	<b>10</b>	<b>6</b>	<b>30</b>	<b>20</b>
<b>6</b>	<b>Flexibility</b> The extent to which the development of the service has the capability to respond to changes in clinical practice, activity and service delivery changes				
6.1	Allows expansion/contraction of service to meet national guidance, service demands and changes in technology	3	0	3	1
6.2	Generic approach wherever possible in consideration of space	2	0	3	1
	<b>Weighted Sub Total</b>	<b>5</b>	<b>0</b>	<b>15</b>	<b>5</b>
<b>7</b>	<b>Accessibility</b> The ease of external access to facilities and one on site, to the services provided				
7.1	Single front door for all children's services, providing safe and easy access through the building	3	0	4	2
7.2	Improvement of access to Children's services and infrastructure to meet the needs of a diverse population	2	0	4	2
	<b>Weighted Sub Total</b>	<b>5</b>	<b>0</b>	<b>20</b>	<b>10</b>
	<b>Overall Total</b>	<b>100</b>	<b>82</b>	<b>396</b>	<b>196</b>

Table 30 Options Appraisal Results

Following the appraisal and subsequent scoring process, Option 2 (the Kensington option) was identified as the preferred option with a score of 396. Option 3 (the Balmoral option) scored 196 and Option 6 (Do Nothing) scored 82.

### 3.3.1 Sensitivity Analysis

A sensitivity analysis comprising three tests was carried out in order to ascertain the reliability of the options appraisal.

#### Sensitivity Evaluation 1: Existing Weighted Benefit Criteria

The following table details the scores for the short listed options based on the agreed benefit criteria:

Benefit Criteria	Do Nothing Option 6	Kensington Option 2	Balmoral Option 3	Kensington Balmoral Relative Differential
Clinical Quality, Safety, Configuration and Choice	3	129	76	41.09%
Reconfiguration and Capacity Planning	62	83	23	72.29%
Quality of Patient Environment	4	62	30	51.61%
Efficiency and Service	7	57	32	43.86%
Training, Education & Research	6	30	20	33.33%
Flexibility	0	15	5	66.67%
Accessibility	0	20	10	50.00%
<b>Total</b>	<b>82</b>	<b>396</b>	<b>196</b>	<b>50.51%</b>
<b>Percentage Score</b>	<b>16.40%</b>	<b>79.20%</b>	<b>39.20%</b>	<b>Average 51.17%</b>

Table 31 Existing weighted benefit criteria

This test shows that on average, Option 3 (Balmoral) scored 51.17% lower relative to Option 2 (Kensington). It also shows that in absolute terms, Option 3 (Balmoral) would need its weighted scores to increase by 40% in order to be in line with the Preferred Option 2 (Kensington).

#### Sensitivity Evaluation 2: Removal of Section 2 Reconfiguration and Capacity Planning from Benefit Criteria

The following table shows the scores for the short listed options when the benefit regarding alignment with reconfiguration and capacity planning is removed:



Benefit Criteria	Do Nothing Option 6	Kensington Option 2	Balmoral Option 3	Kensington Balmoral Relative Differential
Clinical Quality, Safety, Configuration and Choice	3	129	76	41.09%
Quality of Patient Environment	4	62	30	51.61%
Efficiency and Service Effectiveness	7	57	32	43.86%
Training, Education and Research	6	30	20	33.33%
Flexibility	0	15	5	66.67%
Accessibility	0	20	10	50.00%
<b>Total</b>	<b>20</b>	<b>313</b>	<b>173</b>	<b>44.73%</b>
<b>Percentage Score</b>	<b>5.00%</b>	<b>78.25%</b>	<b>43.25%</b>	<b>Average 47.33%</b>

*Table 32 Weighted benefit criteria without benefit criteria section 2*

This shows that on average Option 3 (Balmoral) scored 47.33% lower relative to Option 2 (Kensington). It also shows that in absolute terms Option 3 (Balmoral) weighted scores would have to increase by 35% in order to be in line with the Preferred Option 2 (Kensington).

### Sensitivity Evaluation 3: Removal of weighting of Benefit Criteria

The following table shows the scores for the short list of options when all weighting is removed:

Benefit Criteria	Do Nothing Option	Kensington Option 2	Balmoral Option 3	Kensington Balmoral Relative
Clinical Quality, Safety, Configuration and	1	21	13	38.10%
Reconfiguration and Capacity	10	12	4	66.67%
Quality of Patient	2	17	8	52.94%
Efficiency and Service	2	11	8	27.27%
Training, Education and Research	1	6	4	33.33%
Flexibility	0	6	2	66.67%
Accessibility	0	8	4	50.00%
<b>Total</b>	<b>16</b>	<b>81</b>	<b>43</b>	<b>46.91%</b>
<b>Percentage Score</b>	<b>15.24%</b>	<b>77.14%</b>	<b>40.95%</b>	<b>Average 47.74%</b>

*Table 33 Benefit Criteria without weighting*

This shows that on average, Option 3 (Balmoral) scored 47.74% lower relative to the Preferred Option 2 (Kensington). It also shows that in absolute terms Option 3 (Balmoral) scores would have to increase by 36.19% in order to be in line with the Preferred Option 2 (Kensington). Further we can say that without adjusting scoring directly it is not possible to change the section weighting in order to make Option 3 (Balmoral) the preferred option due to Option 2 (Kensington) scoring higher across the board.

The sensitivity analysis supports Option 2 (Kensington) as the preferred option in all scenarios tested.

### 3.3.2 The Preferred Option (Non-Financial Appraisal)

The Preferred Option from a non-financial/qualitative perspective is Option 2: the EMCHC in the Kensington Building.

## 3.4 Financial and Economic Appraisal

The shortlisted options have been subjected to a financial appraisal. The appraisal period has assumed to be over 62 years.

The following cost and income changes assumed are:

- ▶ Capital costs excluding VAT for including equipment
- ▶ Revenue workforce costs
- ▶ Revenue non-pay costs
- ▶ Notional Lifecycle costs

The 'Do Nothing' option assumes a reduction in the current income and a reduction of direct and indirect costs owing to the assumption that this results in the decommissioning of Level 1 Congenital Heart Disease services from UHL.

The inputs for the economic model are illustrated below:

<b>Economic Inputs</b>	<b>Do Nothing Option 6 (BAU) (£'000)</b>	<b>Kensington Option 2 (£'000 FYE)</b>	<b>Balmoral Option 3 (£'000 FYE)</b>
<b>Capital Costs</b>		<b>12,463</b>	<b>14,697</b>
<b>Lifecycle over appraisal period</b>		<b>35,479</b>	<b>37,621</b>
<b>Changes in Revenue Costs 2023/24 (Reduction in Brackets) made up of:</b>	<b>6,753</b>	<b>5,437</b>	<b>5,437</b>
Additional annual costs – Activity	1,765	1,765	1,765
Additional annual costs – Relocation	3,830	2,470	2,470
Additional annual costs – Standards	1,158	1,158	1,158

*Table 34 Economic Model Inputs*

Lifecycle costs are based on the overall capital costs for each scheme and the assumed split between construction costs and mechanical and engineering (M&E) costs.

Non-cash releasing benefits have been identified for the Kensington Option 2 in terms of sickness absence and reduction in agency spend of £322,000 per annum and £124,000 per annum respectively. This is as a result of securing the future of the service and an improved clinical environment reducing staff sickness and improving retention and recruitment for staff.

### 3.4.1 Capital Costs

Capital costs for Options 2 (Kensington) and 3 (Balmoral) have been calculated on the following basis:

	Kensington Option 2 £'000	Balmoral Option 3 £'000
Departmental Costs	7,016	7,823
On Costs	304	517
<b>Works Cost Total</b>	<b>7,320</b>	<b>8,340</b>
Provisional location adjustment %		
<b>Sub Total (PUBSEC 225)</b>	<b>7,581</b>	<b>8,340</b>
Fees	843	917
Non Works Costs		
Equipment Costs	3,599	3,422
Planning Contingencies	420	500
Optimism Bias	175	791
<b>Total for Approval Purposes (excluding VAT)</b>	<b>12,358</b>	<b>13,970</b>
Inflation to current price base	105	726
<b>Forecast Outturn (excluding VAT)</b>	<b>12,463</b>	<b>14,696</b>

Table 35 Capital Costs Calculations

### 3.4.2 Cost Analysis Assumptions

The costs are shown in current prices, aligning with PUBSEC 250.

The Net Present Value (NPV) excludes sunk costs, transfer payments, VAT, capital charges, depreciation and other non-resource costs.

Optimism bias has been included within both options. The figure used for Option 3 (Balmoral) is higher as a result of the design being developed to early stages only. The amount of optimism bias assumed for Option 2 (Kensington) is at the level considered appropriate for the level of design included in a Full Business Case.

### 3.4.3 Results of the Economic Appraisal

The result of the economic appraisal is detailed in the following table:

<b>Detailed Economic Summary (Discounted) - £'000</b>			
	<b>Do Nothing (BAU) Option 6</b>	<b>Kensington Option 2</b>	<b>Balmoral Option 3</b>
<b>Costs</b>			
Incremental cost increase - opportunity cost	0	(2,810)	(2,296)
Incremental cost increase - capital (including optimism bias)	0	(24,662)	(27,611)
<b>Incremental costs - total</b>	<b>0</b>	<b>(27,472)</b>	<b>(29,907)</b>

<b>Detailed Economic Summary (Discounted) - £'000</b>			
	<b>Do Nothing (BAU) Option 6</b>	<b>Kensington Option 2</b>	<b>Balmoral Option 3</b>
<b>Benefits</b>			
Incremental cost reduction - revenue	0	468,628	468,628
Incremental benefit - cash releasing	0	(407,957)	(404,587)
Incremental benefit - non-cash releasing	0	9,869	0
<b>Incremental benefits - total</b>	<b>0</b>	<b>70,541</b>	<b>64,041</b>
<b>Value for Money</b>			
<b>Net Present Value (NPV)</b>		<b>43,068</b>	<b>34,134</b>
<b>Benefit - cost ratio</b>		<b>2.57</b>	<b>2.14</b>

Table 36 Economic Appraisal Summary

### 3.5 Combining the Financial and Non-Financial Appraisals

The Financial and non-Financial scores were combined to provide the following analysis:

<b>Option</b>	<b>Do Nothing (BAU) Option 6</b>	<b>Kensington Option 2</b>	<b>Balmoral Option 3</b>
Weighted Scores	82	396	196
Rank (non-financial)	3	1	2
Net present cost (NPC) (£k)	724.767	681.698	690.633
Rank (financial)	3	1	2
NPC per point score (£k)	8.84	1.72	3.52
Rank (overall)	3	1	2
Percentage difference from preferred option	413%		105%

Table 37 Combining the FBC Financial and Non-Financial Scores

#### 3.5.1 Sensitivities and Switching Values

Major sensitivities - The following key sensitivities have been reviewed:

1. The level of activity delivered in respect of targets;
2. Changes in incremental costs by 25% reflecting premium rates as a result of failure to recruit. It is assumed that this is only the case in options 2 and 3.

These are summarised in the table below:

Economic Appraisal	Option 6 Business As Usual	Option 2 Kensington	Option 3 Balmoral
Baseline	724.767	681.698	690.633
Sensitivity 1 – No additional activity	679.812	636.372	645.306
Sensitivity 2 – Premium costs	743.552	716.285	725.220

*Table 38 Economic Appraisal Summary*

Option 2 (Kensington) delivers the lowest Net Present Cost (NPC) in both scenarios although Option 6 (Business As Usual (BAU)) becomes significantly financially better as a result of a reduction in activity. Option 2 is most expensive in Option 2 but this is still more economic than the Business As Usual Scenario. The sensitivities affect Options 2 and 3 in a similar way

## 3.6 Treasure Green Book Guidance

Since the options appraisal was undertaken, the Treasury Green book has been updated and the guidance around it now discourages the weighting and scoring methodology, and encourages the benefits of each option to be quantified wherever possible. The criteria for the non-financial appraisal suggest the following in terms of quantification:

Quality of Service and Clinical Outcomes: The Leicester service currently has better than expected outcomes, whereas other providers who would potentially provide the service if UHL lost it have expected outcomes. This can be quantified by assigning a value relative to the income generated by the current service multiplied by the percentage over and above expected outcomes. This relates to circa 1% of the value of income received by the Trust.

Impact on Reconfiguration: An assessment has been made on the impact of each of the options on the UHL Reconfiguration Programme and associated costs. It has been estimated that the Balmoral option would increase the overall timescales for the delivery of the reconfiguration programme and would impact the deliverability of the Development Control Plan (DCP). It would also limit the capacity of the Trust in the short term with a potential reduction in income/increase in costs.

Patient Environment and Accessibility: There will be benefits in respect of the accessibility of the service to patients in the current catchment area. A societal cost has been calculated to reflect the additional travelling (and carbon footprint through fuel usage) to get to another centre and the amount of additional time needed to get to the other centres through days lost at work (for example annual leave taken).

The Trust has looked to quantify wherever possible these criteria and include them in an updated economic analysis, which ignores the non-financial scoring undertaken previously.

### 3.6.1 Summary of Further Benefit and Cost Quantification

The following has been allowed for in the economic analysis:

Description	Classification	Option 6 Do Nothing (BAU) Fiscal Year End (FYE) pa	Option 2 Kensington FYE pa	Option 3 Balmoral FYE pa
Additional cost arising from additional journey time and fuel	Societal	(156,000)		
Working years lost as a result of additional journeys (based on average salary in UK)	Societal	(422,000)		
Impact of quality position 1% over predicted outcome	Non cash releasing		388,000 (post establishment of dedicated children's hospital)	194,000

Table 39 Quantifiable Societal Benefits

### 3.6.2 Revised Economic Analysis

As a result of the allowance for additional non cash releasing and societal benefits, but excluding the non-financial appraisal, Option 2 remains financially the best option, as shown in the following table:

Detailed Economic Summary (Discounted) - £'000			
	Option 0 – Do Nothing (BAU)	Option 2 - Kensington	Option 3 - Balmoral
<b>Costs</b>			
Incremental cost increase - opportunity cost	0	(2,810)	(2,296)
Incremental cost increase - capital (including optimism bias)	0	(24,662)	(27,611)
<b>Incremental costs – total</b>	<b>0</b>	<b>(27,472)</b>	<b>(29,907)</b>
<b>Benefits</b>			
Incremental cost reduction – revenue	0	468,628	468,628
Incremental benefit - cash releasing	0	(407,957)	(404,587)
Incremental benefit - non-cash releasing	0	25,361	7,971



<b>Detailed Economic Summary (Discounted) - £'000</b>			
	<b>Option 0 – Do Nothing (BAU)</b>	<b>Option 2 - Kensington</b>	<b>Option 3 - Balmoral</b>
Incremental benefit – societal	0	23,738	23,738
<b>Incremental benefits – total</b>	<b>0</b>	<b>109,772</b>	<b>95,751</b>
<b>Value for Money</b>			
<b>Net Present Social Value (NPSV)</b>		<b>82,299</b>	<b>65,844</b>
<b>Benefit-cost ratio</b>		<b>4.00</b>	<b>3.20</b>

*Table 40 Detailed Economic Summary*

## 3.7 Risks

### 3.7.1 Risks, Constraints and Interdependencies

The highest rated project risks and constraints are identified in detail within the Strategic Case (section 2), and a full version of the project risk register is detailed in appendix 7. These project risks and constraints would apply to both option 2 (Kensington) and option 3 (Balmoral).

### 3.7.2 Costed Risk Register

Costed risk registers have been completed for all areas of construction, and appropriate contingencies for these have been allocated within the project cost plan. The costed risk registers detail the party responsible for managing each risk, the probability and impact (consequence) of each risk and the expected resultant cost. The costs have been calculated with input from Rider Levett Bucknall (RLB), the cost advisors for this project. Full versions of the costed risk registers are detailed in appendix 8.

## 3.8 Preferred Option

The above analysis confirms that from an economic perspective, combining both the non-financial and financial appraisal, Option 2 – EMCHC in the Kensington Building is the preferred option for the service.

## 4 | The Commercial Case

### 4.1 Commercial Feasibility Introduction

This section of the Full Business Case (FBC) outlines the proposed procurement strategy in relation to the preferred option identified in the Economic Case and describes the construction works required to deliver the transfer of the paediatric element of the East Midlands Congenital Heart Centre (EMCHC), from the Glenfield Hospital (GH) site to the Leicester Royal Infirmary (LRI).

Rider Levett Bucknall (RLB) (the Trust's cost advisors) have assisted in advising, interrogating and challenging the sections within the commercial case, including fees, equipment, planning contingency, optimism bias and VAT recovery to ensure the business case remains within budget constraints. RLB confirm that the business case is commercially viable within the costs included within the business case but highlight that attention should be drawn to the levels of planning contingency and optimism bias (project contingency) and the resultant need for a robust control change process post FBC, to ensure best management of the contingency available.

The existing accommodation for the EMCHC consists of a Cardiac Ward, Outpatients and Cardiac Physiology Department, Paediatric Intensive Care, Unit, Catheterisation Lab, Theatre, parents' rooms and supporting office accommodation. These are detailed in the table below.

Accommodation	Capacity	Comments
Inpatient Accommodation	▶ 17 bed Paediatric Cardiac Ward (Ward 30)	Refurbished in 2016 in order to provide increased capacity to meet the activity levels. Day case patients are also seen within this space.
Inpatient Accommodation	▶ 12 bed Paediatric Intensive Care (PICU)	Consists of 3 side rooms/cubicles and 9 beds in bays.
Parents' Accommodation	▶ 15 bedrooms ▶ Lounge and beverage area	Parents' accommodation funded by Heartlink Charity.
Interventional Room / Catheter Lab	▶ Biplane Catheter Laboratory (Catheter lab B) and associated support space	Shared with Adult Cardiology Services
Theatre	▶ Cardiac Theatre within the Central Operating Department (COD)	Shared with Adult Surgical Services
Outpatient Clinics	▶ 5 Consultation Examination rooms ▶ Associated support	Shared with Adult Congenital Heart Services (operationally managed so that paediatric and adult clinics are

Accommodation	Capacity	Comments
	space	not held simultaneously)
Cardiac Physiology	<ul style="list-style-type: none"> <li>▶ 4 x echo rooms</li> <li>▶ Stress test room</li> <li>▶ Associated support space</li> </ul>	Within the outpatient department. Shared with Adult Congenital Heart Services (operationally managed so that paediatric and adult clinics are not held simultaneously)
Office Accommodation	▶ 50-60 desks approx.	Various locations within close proximity to clinical areas

Table 41 Existing EMCHC Services & Capacity at GH

## 4.2 Scope

### 4.2.1 Subject Matter for Procurement

The capital investment outlined in this FBC consists of a programme of projects to provide the facilities required on the LRI site in support of the relocation of the paediatric element of the EMCHC from the GH. The estates solution will provide assurance that key milestones in the planning of the capital development have been achieved whilst utilising appropriate guidance. This is inclusive of engagement and liaison with all respective stakeholders.

The clinical areas and capacity required are detailed in the following table:

Accommodation Type	Capacity	Location at LRI	Comments
Inpatient Accommodation	<ul style="list-style-type: none"> <li>▶ 17 Paediatric Cardiac Ward beds</li> <li>▶ Associated support space</li> </ul>	Kensington, Level 1	Refurbishment project within existing space
Inpatient Accommodation	<ul style="list-style-type: none"> <li>▶ 12 Paediatric Intensive Care (PIC) beds</li> <li>▶ Associated support space</li> </ul>	Kensington, Level 5	Refurbishment project within existing space
Parents' Accommodation	<ul style="list-style-type: none"> <li>▶ 4 dedicated parents' bedrooms provided on Cardiac Ward</li> <li>▶ <i>(The requirement for an additional 11 beds will be leased)</i></li> </ul>	Kensington, Level 1	Combination of refurbishment of existing space and lease of apartments on Walnut Street

Accommodation Type	Capacity	Location at LRI	Comments
Multi-functional Interventional facility	<ul style="list-style-type: none"> <li>▶ 1 Biplane Catheter Laboratory with theatre capability</li> <li>▶ Associated support space</li> </ul>	New build, accessed through Kensington, Level 1	Part of new build project to create multi-functional room
Theatre	<ul style="list-style-type: none"> <li>▶ 1 Paediatric Cardiac Theatre</li> <li>▶ Associated support space</li> </ul>	New build, accessed through Kensington, Level 1	Part of new build project
Outpatient Clinics (Outpatients Department)	<ul style="list-style-type: none"> <li>▶ 6 consultation examination rooms</li> <li>▶ Associated support space</li> </ul>	Kensington, Level 0	Refurbishment of existing space
Diagnostic Physiology (Outpatients Department)	<ul style="list-style-type: none"> <li>▶ 4 echo rooms</li> <li>▶ 1 stress test room</li> <li>▶ Image reporting room</li> <li>▶ Associated support space</li> </ul>	New build, accessed through Kensington, Level 0	Part of new build project
Office Accommodation	<ul style="list-style-type: none"> <li>▶ 50-60 desks <i>approx.</i></li> </ul>	Various options within close proximity to Kensington Building	Refurbishment of existing spaces. Various options will be reviewed and combined in order to make up total solution e.g. Jarvis Building, Rogers Ward in Victoria
Additional support space and enabling works	<ul style="list-style-type: none"> <li>▶ Multi-Disciplinary Team (MDT) room</li> <li>▶ Theatre changing room</li> <li>▶ Maternity Assessment Unit (MAU) / Assisted Conception Unit (ACU) / switchboard ventilation modifications</li> <li>▶ Works to Jarvis tunnel access ramp</li> </ul>	Various	Refurbishment works within existing space

Table 42 Proposed EMCHC Services &amp; Capacity

Although it does not form part of this business case it is important to highlight that the relocation of EMCHC services to LRI has a key relationship with the LRI site-wide infrastructure project, which ensures that there is sufficient capacity for building services to accommodate the new developments.

As outlined in the economic case, the design solution for the preferred option for the delivery of EMCHC services at the LRI offers optimum clinical and service adjacencies whilst ensuring alignment with the wider reconfiguration programme.

The outcome of this FBC delivers phase one of the long-term vision to bring together all paediatric services onto the LRI site, as described within the Trust's Development Control Plan (DCP). The second phase will consolidate all other children's services into a dedicated Children's Hospital within the Kensington Building on the LRI site.

Thorough feasibility studies have been undertaken to determine the ease of project deliverability within the available space, particularly given that the new build footprint is constrained by the slender plot of land between the existing Kensington building and the site boundary which will form the new build construction site. Whilst elements of the project will be of new build construction, a large proportion will be refurbished accommodation within existing space and therefore also constrained by the footprint of the Kensington building. Health Building Note (HBN) guidance has been applied where achievable and clinically essential, however there is a challenge to accommodate all HBN recommendations within the existing estate. All derogations from HBN have been signed off by the relevant leads (clinical, infection prevention, estates) and the Project Board (see appendix 17).

The new build will be constructed using an innovative alternative to a traditional construction solution. The system is an off-site produced, steel-framed solution that comprises a concrete floor and a high standard of internal finishes, representative of a traditional construction method. It offers a 60 year life span, comparable to that of traditional build. This construction method provides the ability to manipulate the internal layout to ensure it provides full clinical functionality in line with the operational policies.

New build areas comprise:

- ▶ Theatres and Catheter Lab (cath lab) Department - A standalone theatre and cath lab department will be created adjacent to the existing theatre floor of the Kensington building. It will provide a paediatric cardiac theatre and interventional cardiology (catheterisation) bi-plane lab. Additional functionality will be designed into the cath lab to allow surgical procedures to be carried out. The department will contain all necessary clinical support space, including two anaesthetic rooms, a recovery bay, patient holding bay, storage, control room, dirty utility, two scrubs, decontamination facilities for perfusion equipment and transoesophageal echocardiogram (TOE) probes, a waste disposal hold, pharmacy store and staff facilities. An additional theatres changing room and gas cylinder store will be shared with the existing theatres 17 and 18 in the Kensington building, and this has been agreed with both theatre teams and infection prevention.

- ▶ Paediatric Cardiac Outpatient Department - The Cardiac Physiology facilities within the department will be provided as part of the new build element of the project. This includes four Echocardiogram (ECHO) rooms (one of which has been increased in size in order to future-proof for larger equipment if required), a stress test room and an image reporting room. The rest of the accommodation for the department is provided as part of the refurbishment works to existing estate.

Refurbishment areas within existing estate comprise:

- ▶ Paediatric Intensive Care Unit (PICU): A 12 bed PICU on level 5 of the Kensington Building will consist of 8 beds in a bay and 4 side rooms. One of the side rooms also functions as a simulation room, to allow teaching on the unit and two are isolation rooms with pressured lobbies. The unit will have a dedicated nurses base, dirty utility, clean utility/fluids store (including controlled drugs store), medical physics workshop, storage (ECMO, consumables, ward equipment, theatre equipment, linen), staff facilities (staff room, staff change) and two offices. A parents lounge and separate quiet room are located by the entrance to the unit and a consultant on-call room will be provided adjacent. A dedicated lift call system will be installed onto one of the lifts, for rapid transfer between the PICU, the Theatre and Cath Lab, Cardiac Ward, and down to the Basement Level to access the wider hospital (Children's Emergency Department, CT and MRI facilities).
- ▶ Cardiac Ward: A 17 bed paediatric inpatient ward to provide care for pre and post-surgical patients (aside from those requiring level 3 critical care) and for day case patients (primarily patients requiring an interventional or diagnostic catheter procedure). The beds are in a 6 bed bay, 4 bed bay, 2 bed bay and 5 side rooms, 4 of which are en-suite. Three of the beds (a two bed bay and a side room) have enhanced medical gases to allow higher dependency patients to be looked after. The unit will have a dedicated nurses' base close to the enhanced service beds, as well as a reception at its entrance, patient and parents waiting area, a clean utility, dirty utility and treatment room, bathroom and staff room with small shower room off. There is a large play room, with tables and chairs and a large area for soft play, and a smaller adolescent room with computer entertainment.
- ▶ Paediatric Cardiac Outpatient Department; A Paediatric Cardiac Physiology and Outpatient Department is required for outpatient clinics and non-invasive diagnostic investigations to take place, as well as the imaging of some inpatients if they are well enough to be brought down to the department. The department is created from a combination of refurbished and new build accommodation (identified above). The refurbished area will accommodate 6 consultation-examination rooms, a Treatment and Venepuncture room, an ECG room, a Weights and Measures room, a Pacing and Tape room, a further two offices and an Interview Room. In addition to this, there is patient support space in the form of a large waiting area with dedicated play and adolescent areas and a breast feeding room. The disposal hold will be shared with ante-natal clinics, also situated on the ground floor.
- ▶ Offices: approximately 50-60 desk spaces (combination of clinical and admin function) are required at the LRI to support the service. Options have been

identified and will be progressed post approval of the full business case (options include reconfiguration of space in the Rogers Ward, review of the space in the Level 2 in the Jarvis Building and Women's and Children's Management Offices, and use of existing EMCHC offices at the Glenfield to allow space for 'office swaps' for staff who do not require a base at the LRI).

- ▶ Additional Support Space and enabling works:
  - Multi-Disciplinary Team (MDT) Room: in order to comply with the CHD standards, the EMCHC require an MDT room which has suitable multimodal IT and display facilities as well as remote networking capability including high resolution video conferencing. The Parentcraft Room (Ground Floor, Kensington Building) will be the location for an MDT room, which will be shared with the Maternity service (providing enhanced facilities for both services).
  - Enabling Ventilation: the new build extension requires windows in the Assisted Conception Unit (ACU), Maternity Assessment Unit (MAU) and Switchboard to be blocked up. These areas are currently naturally ventilated, therefore works are required to ensure that existing local ventilation is enhanced pre construction.
  - Theatres/Cath Lab Changing Room: An additional unisex changing room with individual cubicles and lockers will be created in an existing quiet room, opposite the new build theatre and cath lab extension. This location has been approved by Infection Prevention.
  - Jarvis Access Tunnel: The access from the Kensington Building to the wider Leicester Royal Infirmary site (primarily the Children's Emergency Department, MRI and CT scanning, and wider paediatric services) will be through the tunnel which runs under the Jarvis Building. In order to facilitate the safe transfer of patients on ECMO, the gradient of an existing ramp will be reduced.
  - Parents/Carers Accommodation: Four dedicated EMCHC parents' bedrooms will be provided on the cardiac ward and additional bedrooms for parent(s)/carer(s) will be leased in the accommodation block on Walnut Street. The revenue for these is identified within the Income and Expenditure position for this business case, and through charitable funding.

## 4.3 Procurement Strategy and Implementation Timescales

### 4.3.1 Procurement options

There has been a comprehensive review of the procurement routes for the respective elements of works. No overarching procurement route is being used due to the individual requirements and challenges of each project area. Due to this, a mixed approach to the procurement strategy for construction works has been adopted. This is detailed in the following table:



Procurement Route	New Build	Refurbishment
Traditional competitive tender	No	Yes
National Framework (SBS)	Yes	No

Table 43 Procurement Routes

The new build extension to the Kensington Building and the connections formed to the main building has been procured through the Shared Business Services (SBS) framework, whilst the refurbishment elements are being procured via a traditional competitive tendering process.

Prior to agreeing the preferred route to enable the delivery of the programme of works, the Trust considered the following options:

- ▶ Using the P22 NHS capital procurement framework;
- ▶ Traditional tender process through the ProContract portal;
- ▶ Single tender action to an individual contractor;
- ▶ Utilising national frameworks available to the NHS;
- ▶ Use of Private Finance 2 (PF2).

During the review of procurement route options, the following points were taken into consideration for each area of works:

- ▶ Size and complexity of the works;
- ▶ Cost effective procurement route;
- ▶ Compliance with procurement legislation;
- ▶ Programme requirements to enable delivery to the agreed operational deadline;
- ▶ Extent of pre-works engagement with the contractor required for each procurement route.

## 4.4 Procurement Process

### 4.4.1 Process for Selection of Contractors and Outcome of the Selection Process

Due to numerous factors the Trust opted for a mixed procurement strategy.

The table below details the preferred procurement option and the rationale for the choice in relation to each area.

Area of works	Procurement Route	Reason for Selection
New build extension (theatre and cath lab department, outpatients and cardiac physiology, and basement plant	Selection of a contractor from the 'Shared Business Service' framework (SBS)	Design and build by a specialist bespoke contractor will deliver Value For Money (VFM) and can be achieved to the required timescales

Area of works	Procurement Route	Reason for Selection
room)		
Outpatients department (refurbishment of existing space)	Traditional competitive tender	Low value, light scope of works. Tender will achieve best VFM through our local Small and Medium-sized Enterprise (SME) contractors.
Cardiac ward (refurbishment of existing ward space)	Traditional competitive tender	Part refurbishment and relative low value. Due to nature of works open tender will achieve best VFM through our local SME contractors.
PICU (refurbishment of existing space)	Traditional competitive tender	Open tender chosen due to the type of works and the view that it would achieve VFM using local SME contractors.  The scheme will run concurrent with the main build and it was decided that giving it to the same contractor may cause programme and resource pressures for the new build contractor.
Parents Accommodation	Traditional competitive tender	Low value, light scope of works. Tender will achieve best VFM through our local SME contractors.
Office Accommodation	Traditional competitive tender	Low value, light scope of works. Tender will achieve best VFM through our local SME contractors.
Additional support space and enabling works	Traditional competitive tender	Low value, light scope of works. Tender will achieve best VFM through our local SME contractors.

*Table 44 Preferred Procurement Options for Each Scheme*

## New Build

In 2018, the Trust appointed Galliford Try (GT) as their P22 Principal Supply Chain Partner (PSCP); and the P22 procurement route for the delivery of the EMCHC programme was initially planned.

The design was progressed with the PSCP but an affordable Guaranteed Maximum Price (GMP) was unable to be reached that was acceptable to both parties. In light of this, the Trust considered alternatives to P22 that would be more affordable. The decision was made to progress an off-site construction method, which would offer best value for money. Since this decision was made to terminate the contract with GT, a

lessons' learnt exercise has been carried out, and GT remain the Trust's PSCP for relevant future schemes.

The Trust have now adopted a mixed approach to procurement with the new build procured via an alternative framework agreement (SBS); and the refurbishment areas delivered via traditional tender.

Within the public sector there are a range of national frameworks available for use. The Trust reviewed these and agreed the use of the Shared Business Service Framework (SBS) and the London Housing Communities (LHC) new modular buildings framework.

The Trust investigated the merits of each framework and confirmed that the contract fee payable is 1% of the contract value under both frameworks. Both frameworks offer the same flexibility in terms of the construction contract type. The Trust has decided to appoint on the SBS framework because it is well established, as well as having had positive experience in its use in the past. It should be noted that whilst the delivery of an off-site construction build could have been procured through the P22 framework, we believe that this would be more complex and costly, due to the increased overheads and profit (OH&P) involved in working with a PSCP.

MTX Contracts Limited were selected to develop the detailed designs and deliver the new build, based on the Trust's previous experience of delivering large complex off-site build schemes with them. MTX Contracts Limited will be appointed from the SBS framework ref *SBS/16/JS/PZS/9094*. Details of the framework and evidence of our eligibility to use it are provided in Appendix 9.

RLB have been involved as Trust Cost Advisors throughout the life of the scheme assisting the Trust with the objective of delivering a commercially viable project and ensuring value for money is achieved. This was initially procured through the P22 Framework with Galliford Try appointed as the PSCP, however, despite numerous attempts including removing the refurbishment element from the scheme this approach never reached an affordable solution. RLB continued commercial, programme and procurement advice assisting the Trust in reaching a decision to adopt an alternative procurement route [as already detailed].

Since MTX have been appointed to deliver the new build element of the scheme, RLB have continually reviewed and challenged the commercial elements provided by MTX to ensure the Trust received value for money. RLB requested that MTX provide three sub-contract quotes for all works packages over £5000 to evidence market testing and drove an open book approach to preliminaries, risk and overheads and profit. This approach ensured sufficient commercial information was obtained to validate proposal where VFM, important in a single source procurement route.

MTX were unable to provide three sub-contract quotes for all works packages in excess of £5,000; but of the major works packages comprising over 70% of the construction costs at least two sub-contract returns were provided. Following an in-depth review of the all the provided sub-contract returns and the commercial element of the GMP submitted by MTX; RLB are satisfied that it represents value for money and is commercially viable. The GMP reports are included in Appendix 13.

## Refurbishment

The refurbishment elements will be procured using traditional competitive tender and all schemes will be tendered using the Due North Procurement Portal. PICU, Cardiac Ward and the refurbishment element of the outpatient department have not been tendered as yet as construction is not due to start until April 2020 rendering the returns out of date if tendered to inform this FBC. Pre-tender estimates for these areas have therefore been worked up by Rider Levett Bucknall (RLB) (the Trust's cost advisor) and tender will be carried out post Full Business Case (FBC) approval. RLB have been involved throughout the design process undertaking cost estimates and challenging the design team to ensure the design is achievable within budget.

In order to include robust budget values within the business case, RLB have produced a pre-tender estimate for the PICU and Cardiac Ward, and due to the high level nature of scope, a feasibility cost estimate for the Out-Patients department. All refurbishment sections are deliverable commercially to the costs included in the business case if managed diligently during the tender and construction period.

The EMCHC programme takes into consideration the procurement timescales to enable delivery of the programme of works for the agreed end date of December 2020.

As the refurbishment elements are not programmed to start on site until April 2020, the Trust decided not to tender the schemes prior to the approval of the business case. In order to include robust budget values within the business case, RLB have produced a pre-tender estimate for the PICU and Cardiac Ward, and due to the high level nature of scope, a feasibility cost estimate for the Out-Patients department. All three refurbishment sections are deliverable commercially to the costs included in the business case if managed diligently during the tender and construction period.

Contractors invited to tender for these schemes will be drawn from the Trust approved contractor list and a minimum of five contractors will be invited to tender. They will all be known to the Trust and in most cases will have successfully completed work for the Trust in the past. All will have extensive experience in delivering schemes within healthcare premises in live environments.

In deciding on the most appropriate procurement route, the Trust has considered procurement which complies with EU Law and Trust procurement practice. The procurement process is in accordance with the Public Contracts Regulations 2015.

The following is an example of the evaluation criteria that will be used to select the preferred contractor. Tenders will be evaluated and scored against quality (70%) and cost (30%). The table below provides details of the scoring criteria:

Item	Element	Weighting
	<b>Financial</b>	
A	Financial performance and status of the company - Contractor is to provide 3 years of accounts electronically during the tender period.	Pass / Fail
	<b>Tendered Price</b>	
B	Tendered Price	30.00%

	Quality	
C	Provide a detailed tender method statement – outlining how contractors approach the works; response should consider: Traffic Management, Buildability and Site Constraints	15.00%
D	Programme – detailed programme to be provided that complies with the dates as noted in the Employer's Requirements	12.50%
E	Management Structure – provide an organogram and CV's of key staff to be employed on the project, including experience working within the health sector	12.50%
F	Compliance with the tender and contract conditions – Acceptance of Schedule of Amendments, Statement of Compliance with the Employer's Requirements, Lack of Tender Qualifications	12.50%
G	Supply Chain – provide details of proposed supply chain, highlighting use of local labour/businesses	10.00%
H	Health & Safety – provide details of contractor's organisation's health and safety representative for the works and outline how the project is controlled from a health and safety perspective in line with the CDM Regulations. Identify and discuss the mitigation of three risks that you consider to be fundamental to the safe completion of the project. Responses to this question must be specific to the works and must not consist of a copy of the health and safety policy	7.50%

*Table 45 Tender Evaluation Criteria*

For each scheme, based on the tender evaluation process, a short list of 2 or 3 contractors will be created. These contractors will be invited in for interview where the Trust and design team can discuss the returns, seek clarifications and discuss any issues raised by the contractor.

At the end of the evaluation process, the Trust cost advisor will submit a detailed tender evaluation report with a recommendation of which contractor should be appointed.

Pre-tender estimates will be included in Appendix 13.

The Trust will evaluate all the costs advisor's tender reports and appoint a contractor that meets time, cost and quality requirements. If however the preferred contractors tender is not the lowest, a detailed analysis will be undertaken to demonstrate the benefits of appointing said contractor.

### Due diligence

Experian reports will be obtained for all shortlisted contractors. These will be analysed by the Trust finance lead and the Trust appointed cost advisor to support recommendations made to the Trust Executive.

The Experian reports for MTX can be found in Appendix14.

An analysis of the MTX credit reports has raised concerns that contracts associated with UHL will form the majority of the company's turnover over the next 12 months. MTX are currently on site at Glenfield Hospital delivering the new build of three modular wards as part of the ICU and associated services project. During the life of this contract it is been clear that timely payment of invoices is critical to cash flow.

The following mitigations will be implemented in order to give the Trust a degree of assurance that the contract can be delivered on both projects:

- ▶ The start of construction for the EMCHC project (Jan 2020) means there will be a limited period of overlap with the ICU project (circa 8 weeks);
- ▶ The Trust will be cognisant of the cash flow profiles for both schemes and will seek to pay within contract terms at all times;
- ▶ Where the Trust is paying for construction that has occurred off- site, a vesting certificate<sup>1</sup> will be obtained;
- ▶ The Trust does not need to commit to the construction contract until October 2019 prior to which there will be opportunity to reassess the company financial position.

## 4.5 Equipment Procurement Strategy

The Trust is adopting an approach whereby relevant equipment will be transferred between sites with the service moves, in order to minimise additional costs associated with the purchase of new equipment. The fully costed equipment schedules for each scheme are included in appendix 12.

Within this business case, the specific departments require separate consideration, as follows:

- ▶ **Theatre and Cath Lab Department** – All new equipment will be provided as this is a 'brand-new' department – the majority of existing equipment will remain at the GH, to be used by Hepato Pancreato Biliary (HPB), Renal Transplant and the Adult Congenital Heart Disease (ACHD) services. The equipment required for the Theatre Floor is complex and expensive as it is predominately specialist medical equipment. All of the equipment will be newly procured, apart from those items currently at the GH which are exclusively paediatric, which will be transferred. This is detailed in the equipment schedule and is fully costed within this FBC.
- ▶ **PICU** - As this is an existing unit transferring from the GH to the LRI, the majority of equipment will be transferred, however some items of equipment are approaching the time at which they would be replaced, therefore will be purchased as new as a part of this project. For example, patient monitoring will be replaced with a new Philips system. This will also ease the transfer of patients from the GH to the LRI when the service moves, as these systems can be fully tested and in situ prior to patients arriving on the unit. The PICU beds

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<sup>1</sup> A vesting certificate or agreement for construction goods, plant or materials, in letter form, used to confirm that ownership of the goods, plant or materials will transfer from one party to another on payment.



will also benefit from a new freestanding vertical bed head trunking solution. This is detailed in the equipment schedule and fully costed within this FBC.

- ▶ **Outpatients and Cardiac Physiology Department (OPD)** - The OPD at the GH is currently shared with the ACHD service, therefore the majority of existing equipment will need to remain at the GH for the adult service. Specialist paediatric equipment will move to the LRI with the paediatric service, and all other required equipment will be procured as new. This includes four new echo machines with associated probes. This is detailed in the equipment schedule and fully costed within this FBC.
- ▶ **Cardiac Ward** – As this is an existing ward which is moving from the GH to the LRI, the majority of equipment will be transferred, however some items of equipment will need to be procured as new to ensure the area is clinically functional prior to occupation. This is detailed in the equipment schedule and fully costed within this FBC.

An allowance is made within the capital costs of this FBC for all items of equipment detailed within the equipment schedule. A summary of the costs per department is as follows:

Areas	Furniture & Equipment (F&E) Cost
Theatre and Cath Lab Department	£2,155,374.00
PICU	£349,219.81
Consultant on call room	£635.00
Cardiac Ward	£97,982.00
Outpatients and Diagnostic Physiology Department	£534,535.00
Equipment Schedule - Other Costs	£5,000
IT Equipment	These costs are not included as part of the F&E schedule and are identified in the IT costs for the project
<b>TOTAL COST</b>	<b>£3,142,745.81</b>

*Table 46 Summary of Costed Equipment Schedules*

#### 4.5.1 Specialised Procurement

This business case assumed that the Cath Lab Imaging equipment package will be procured through the Trust's Managed Equipment Service (MES) provider, Althea.

Lead in times will be factored into the construction programme, and we will work with Althea and MTX to ensure equipment is procured at the required time in order to deliver the project to schedule. Installation and specialist commissioning of the equipment has been factored into the project timeline in accordance with the manufacturers' advice and shared with our construction contractor.



The MES contract provides financial benefit to the Trust through VAT relief, however any decisions made will need to be considered within the context of the Trust's capital and revenue plans. The Trust will need to financially review the offer of any equipment proposed to go through the MES to ensure Value for Money (VfM).

## 4.5.2 Equipment Procurement Process

The Trust has a strategy for the purchasing of capital equipment in line with EU procurement law. This reflects the following in terms of value:

- ▶ £5k to £24k - The Trust can order best price from supply catalogue
- ▶ £25k to £118,133 - The Trust must obtain three Quotes or use framework contract
- ▶ Over £118,133 - The Trust must use the Framework/Official Journal of the European Union (OJEU) Tender process

**Waiver form** – This is to be completed where the supplier or product is sought outside of this procurement process for a valid reason. This must be accompanied by a waiver which has been authorised and signed off according to the budget values.

In addition to the above, the following shall be taken into consideration where appropriate:

- ▶ Taking the opportunity to trial new equipment where possible, to obtain value for money whilst ensuring that UHL and clinical standards are met;
- ▶ Standardising general equipment where possible, to take advantage of economies of scale on price;
- ▶ Consolidating equipment purchases with other schemes on a similar timescale to take advantage of economies of scale on price.

An allowance has been made within the Income and Expenditure (I&E) calculations to cover the cost of equipment maintenance.

The procurement of Furniture and Equipment (F&E) for this project will be managed by the procurement lead and will follow a staged process to ensure compliance and that clinical and specialist input is sought prior to purchase.

The procurement of equipment is classified in accordance to type:

- ▶ **Group 1:** Procurement and fitted by the Contractor
- ▶ **Group 2:** Procured by the Trust and fitted by the Contractor
- ▶ **Groups 3 & 4:** Procured by the Trust

The following table highlights the stages of procurement activity for this project, prior to and during the commissioning period:

Stage	Activity	Lead
<b>Stage 1:</b> Pre-procurement actions and	▶ Prioritisation of the procurement of Group 2 followed by Group 3 for New Equipment	Procurement Lead in liaison with Project Manager

planning	<ul style="list-style-type: none"> <li>▶ Consultation with the following key internal groups: <ul style="list-style-type: none"> <li>○ Medical Physics - medical equipment</li> <li>○ Clinical leads</li> <li>○ Specialist teams such as Manual Handling (MH), Tissue Viability (TV), Infection Prevention (IP), Bed Management Team</li> <li>○ IM&amp;T</li> <li>○ Supplies &amp; Distribution team</li> <li>○ Equipment transfers lead</li> </ul> </li> </ul>	
<b>Stage 2:</b> Quotes and Orders	<ul style="list-style-type: none"> <li>▶ All procurement will be facilitated by a member of the procurement team who will act the key point of contact and liaison with the supplier/ Supply Chain, and relevant Internal Lead to: <ul style="list-style-type: none"> <li>○ Undertake appropriate procurement action – mini-competition, obtain quotes;</li> <li>○ Obtain confirmation from the relevant lead tasked with equipment transfers prior to orders being placed;</li> <li>○ Budgets sign off / authorisation of the budget by project lead prior to placing the orders to ensure budgets are monitored;</li> <li>○ Placing authorised orders;</li> <li>○ Action plan against agreed timeline.</li> </ul> </li> </ul>	Procurement Lead in Liaison with Project Manager
<b>Stage 3-</b> Post procurement activity - preparation for inventory and supplies	<ul style="list-style-type: none"> <li>▶ The Materials Handling Unit (MHU) will be informed of group 2 &amp; 3 equipment order plan, storage, delivery plan and consumable changes in demand and restocking</li> <li>▶ Ensuring goods received are fit for purpose: process to ensure goods have been duly received, examined and are in accordance with specification and the prices are correct</li> </ul>	Procurement Lead in liaison with Project Manager
<b>Stage 4 –</b> Medical & IT equipment commissioning	<ul style="list-style-type: none"> <li>▶ A plan of action will be agreed with Medical Physics / IM&amp;T for tagging equipment</li> </ul>	Procurement Lead in liaison with Project Manager

Table 47 Project Procurement Activity

The stages identified above follow on from and utilise the following information sources:

- ▶ Equipment schedule (including detail regarding items of equipment due to be transferred)
- ▶ Architect / Technical Drawings
- ▶ Trust standardised equipment list

Throughout the stages outlined above, there will be ongoing processes to:

- ▶ Compare and contract within the existing budget;
- ▶ Review and refresh the transfer of equipment list;
- ▶ Adhere to the budget and ensure that due governance is followed in terms of change control.

The following table highlights the specific timelines for this project in alignment with the previously identified stages of procurement activity, prior to and during the commissioning period.

Procurement / Tasks action	Procurement of Equipment
Stage 2	
Sourcing (quotes / mini-comp / trials etc)	From mid-June 2020 onwards
Stage 2 - Orders:	
Group 2	By Aug-2020
Group 3	By Sept-2020
Stock item replenishment	Nov-2020
Deep clean period Note: No activity onsite during this period	02-Nov-2020 to 11-Dec-2020 (During commissioning period)
Stage 3 - Delivery:	
Group 2	Oct-2020
Group 3	Nov-2020
Stock replenishment	Nov-2020
Onsite staff equipment training period	02-Nov-2020 to 11-Dec-2020
EMCHC operational commissioning period	02-Nov-2020 to 11-Dec-2020
EMCHC Opening - Go live date / service moves to LRI	11-Dec-2020 to 15-Dec-2020

Table 48 Timelines for Procurement of Equipment

## 4.6 Proposed Key Contractual Clauses

The Trust's cost advisor will draft the contract for discussion and agreement between the Trust and contractors. The new build will be delivered using the New Engineering Contract (NEC) 3 Contract Option A. Any Z Clauses will be created so as not to unnecessarily increase cost or dilute Value for Money (VfM). The refurbishment projects will be delivered using the Joint Contracts Tribunal (JCT) form of contract.

## 4.6.1 Proposed Contract Length(s)

The following table outlines the dates set for each contract as per the agreed master programme. The programme will be reviewed on a monthly basis and any changes will be reported to the Children's Hospital Project Board as required.

Milestone Activity	New Build Extension (Theatres and OPD)	Refurbished OPD	Refurbished PICU	Refurbished Cardiac Ward
Issue tender queries on ProContract portal	GMP issued and forms part of the FBC	08/06/2020 – 10/07/2020	02/12/2019 – 10/01/2020	17/02/2020 – 20/03/2020
Tender returns	GMP issued and forms part of the FBC	10/07/2020	10/01/2020	20/03/2020
Tender analysis and evaluation	GMP issued and forms part of the FBC	13/07/2020 – 31/07/2020	13/01/2020 – 24/01/2020	23/03/2020 – 03/04/2020
Award construction contracts	16/09/2019	03/08/2020	17/02/2020	11/05/2020
Commencement of construction	13/01/2020	24/08/2020	06/04/2020	29/06/2020
Construction complete	13/11/2020	13/11/2020	30/10/2020	13/11/2020
Operational commissioning	16/11/2020 – 11/12/2020	16/11/2020 – 11/12/2020	02/11/2020 – 11/12/2020	16/11/2020 – 11/12/2020
Transfer of service and go live	11/12/2020 - 15/12/2020	11/12/2020 - 15/12/2020	11/12/2020 - 15/12/2020	11/12/2020 - 15/12/2020

Table 49 Construction Programme

## 4.6.2 Payment Mechanism

The Trust will make payments in accordance with the valuation periods prescribed in the contract. Prior to payment, our external cost advisor will certify each invoice having ensured that it is valid and reflects the relevant valuation.

The Trust standard payment terms will apply to all contracts entered into for this project.

## 4.7 Risk

### 4.7.1 Review of Commercial Risk

The general principle is that risks should be managed by the most appropriate partner in the construction process ensuring that the responsibility is placed on the designated partner with the ability to control and insure against that risk.

An assessment of how the associated risks might be apportioned between the Trust, the professional design team and the construction company has been carried out for each aspect of the project.

The costed risk registers for construction are included in appendix 8, and confirm the risk owners within each scheme.

#### 4.7.2 Potential for Risk Transfer

Due to our mixed procurement strategy the degree of risk transfer will vary. For example, the new build wards will be procured through a design and build contract which places more of the risk with the contractor. Where traditional tender is used, the Trust will employ the design team and thus bear a greater proportion of the responsibility if problems occur. We are confident that risk is appropriately placed to achieve best value for money and appropriate management of risk.

### 4.8 Personnel Implications (including TUPE)

The project Human Resources (HR) Business Partner has developed plans to proactively plan for the Management of Change (MoC) which the transfer of services between sites will necessitate. This is detailed in section 7.7.6 of this FBC. All services and individuals affected are captured by service line reporting and Electronic Staff Record (ESR) data. Intelligence captured will include the number of staff and implications for travel and parking. Data will be analysed at an individual level to progress the detailed work necessary across staff groups.

No staff will be affected by transfer of uptakings (TUPE) arising from this FBC.

### 4.9 Drawings

The preferred option for each scheme has been fully developed as part of the design and tender process. The respective drawings are included in Appendix 15.

#### 4.9.1 1:50 drawings, site plans

1:50 drawings for each scheme are included in Appendix 15.

The following image is an architect's impression of the EMCHC new build.



Figure 11 Architect Impression of EMCHC New Build (Children's Hospital Phase I)

#### 4.9.2 Schedule of Accommodation

To enable designs and 1:200 plans to be produced, a Schedule of Accommodation (SoA) for each separate scheme was developed through engagement with the clinical teams, to confirm the required functional content. An iterative approach was adopted with the clinical and management teams to deliver a finalised schedule. Schedules of accommodation for each scheme are included in Appendix 16.

#### 4.9.3 Land Transactions

All projects are being delivered within retained estate or on land within the existing LRI site boundary, therefore there are no land transactions associated with this FBC.

#### 4.9.4 Design Quality Indicator (DQI)

A formal DQI assessment has not been undertaken however the DQI key principles of quality, functionality and impact have been progressed as key components of the design development process. It should be noted that it will be difficult to address all requirements in all areas, for example the relatively minor refurbishment scope of the Cardiac Ward and the area of the Outpatients Department within retained estate.

Continual design review and development has been facilitated through clinical engagement sessions for each area as detailed in section 7.3.1 of this FBC. These meetings have been well attended by a range of stakeholders and have provided the staff groups with the opportunity to review design and to consider any additional design functionality that will be required for integration in a multi-disciplinary setting.



## 4.9.5 Government Construction Strategy

This project has been developed in line with the Government Construction Strategy. This includes:

- ▶ Early engagement with the supply chain has helped us to develop designs which are buildable, cost effective and take account for site constraints. Appointing a specialist contractor for the off-site construction contract to design the new build extension has reduced cost and provided programme efficiencies when compared to a traditional build method.
- ▶ The principles of Building Information Modelling (BIM) have been followed and implemented on this project throughout each design stage. 3D Revit models have been produced by the design team and relevant clash detection has been undertaken, with designs rectified and updated to overcome these issues.
- ▶ Government soft landings: the Trust recognises that the application of government soft landings is key to the delivery of a building that meets the users expectations, delivers performance for the long-term and contributes to a reduction in life cycle costs. To this end, the Trust has fully integrated the hard and soft Facilities and Maintenance (FM) operational teams into the design process. Our experience is that this has informed:
  - The application of lessons learned from previous schemes to inform buildability, usability and manageability;
  - Engagement with the Operational Estates Team to provide a technical design reality check;
  - The inclusion of FM staff and contractors in design and construction reviews;
  - The necessity to provide building operational technical guides for users;
  - Co-ordinated moving plans;
  - The decision to carry out regular multi-disciplinary walkabouts to spot any emerging issues during construction;
  - Safe access to carry out maintenance to plant and equipment;
  - Ensuring sufficient FM facilities, such as waste disposal, linen storage and patient food handling;
  - The decision to design with finishes which are maintainable and have longevity, e.g. flooring, worktops, wall protection;
  - The installation of appropriate metering so that the energy use within a building can be measured;
  - The planning of formal post occupation (POE) reviews after 12 months;
  - The monitoring of the building for two years post defect period to inform the final performance review.



#### 4.9.6 Government Consumerism Requirements

Our design solutions will, wherever possible, comply with consumerism requirements. These include:

- ▶ Achieving high levels of privacy and dignity;
- ▶ Good use of natural light;
- ▶ Use of high quality materials to reduce life cycle costs;
- ▶ Provision of single sex wash facilities.

The table below outlines at a high level the delivery of each scheme against the criteria; with further detail being provided in the Clinical Quality Case. It should be noted that there is greater opportunity for the delivery of these criteria in new build schemes as opposed to retained estate, due to spatial restraints.

Consumerism Requirement	PICU	Cardiac Ward	New Build Theatre Dept	OPD
Acceptable levels of privacy and dignity at all times	✓	✓	✓	✓
Gender specific day rooms	n/a	n/a	n/a	n/a
High specification fabric and finishes	✓	✓	✓	✓
Natural light	✓	✓	✓	✓
Minimised discomfort from solar gain	✓	✓	✓	✓
Dedicated storage space to support high standards of housekeeping and user safety	✓	✓	✓	✓
Dedicated storage for waste awaiting periodic removal	✓	✓	✓	✓
Inpatient configurations of >50% single en-suite	✗	✗	n/a	n/a
Bed bays with separate en-suite WC and shower facilities with 3.6 meter bed centres	✗	✗	n/a	n/a
Single sex washing and toilet facilities	n/a	n/a	n/a	n/a
Safe and accessible storage of belongings including cash	✓	✓	✓	✓
Immediate patient access to call points for summoning assistance	✓	✓	✓	✓
Patient control of personal ambient environmental temperatures	✗	✗	✗	✗
Lighting at bed head conducive to reading and close work	✓	✓	n/a	n/a
Patient bedside communication and entertainment systems	✗	✗	n/a	n/a
Elimination of mixed sex accommodation	n/a	n/a	n/a	n/a

*Table 50 Delivery of Consumerism*

#### 4.9.7 Compliance with Department of Health Requirements for Healthcare Buildings

Whenever possible, the schemes will comply with Building Regulations, European Standards, British Standards and Codes of Practice, guidance on the design and construction of primary care and general medical facilities. Much of this is contained in a series of DH publications and guidance documents primarily written for the NHS, including but not limited to the following:

- ▶ Health Building Notes (HBNs);
- ▶ Health Technical Memoranda (HTMs).

Specific details for each scheme in relation to alignment with Health Building Note (HBN) and Health Technical Memorandum (HTM) compliance and derogations can be found in the Clinical Quality Case.

None of the derogations adversely impact upon achievement of the target BREEAM rating.

The NHS Constitution commits the NHS to provide services in a clean and safe environment that is fit for purpose and based on national best practice. These are outlined within HBN and HTMs, providing national best practice for the design and layout of facilities. For this project, key titles among many that will be relevant include:

- ▶ HBN 00-01 General Design Guidance for Health Care Buildings;
- ▶ HBN 00-09 Infection Control
- ▶ HBN 01-01 Cardiac Facilities
- ▶ HBN 04-02 Critical Care Units
- ▶ HBN 06 Diagnostic Imaging
- ▶ HBN 23 Hospital Accommodation for Children
- ▶ HTM 02-01 Medical Gas pipeline systems Part A
- ▶ HTM 03-01 Ventilation, 2006.

The design development of this scheme has endeavoured to be delivered within these guidance documents however as the scheme is developed within a limited footprint and involves refurbishment, some recommendations made by the DH guidance are not achievable – these are noted as derogations. Each derogation has been approved by the most appropriate persons (clinical leads, infection prevention, estates) and the Children's Hospital Project Board have signed these off before they are agreed and implemented.

The signed derogation schedules are included in Appendix 17.

#### 4.9.8 Building Research Establishment Environmental Assessment Method (BREEAM)

The BREEAM assessment method will be used for the new build element of the project only. It has not been applied to refurbished areas owing to the use of the existing infrastructure and the minimal works being undertaken.

The Trust appointed BREEAM assessor carried out a pre-assessment on the new build to determine the available target level of classification at FBC stage. The decision was made to focus on achieving BREEAM 2014 'Very Good'.

There will be a 'confirm and challenge' exercise with the design / construction team and evidence will be collated by our BREEAM assessor in preparation for submission to the Building Research Establishment (BRE) for approval and subsequent issue of the Interim Design Certification.

The BREEAM pre-assessment report can be found at Appendix 18.

#### 4.9.9 Fire Code Compliance

Fire code compliance has been ensured throughout the development of the robust design for both the new build and refurbished areas. UHL has a directly employed Fire Advisor, who has worked with the design teams to ensure fire code compliance. The Fire Advisor has signed off the Fire Strategy drawings at FBC stage; please see Appendix 19.

#### 4.9.10 Infection Prevention (IP)

The estates embedded Senior Infection Prevention Nurse has been involved in the design development from the outset, all issues and concerns have been addressed and the design and identified IP derogations signed-off by Dr David Jenkins, the Trust Lead Microbiologist. The positioning of fixed items within bedded areas, kitchens and dirty utilities has been directed by the IP Nurse and reflected within the design. On-going design detail with regards to the position of hand sanitizers, dani-centres, soap, etc. will be decided on site during the commissioning stage at the request of the IP lead nurse and clinical representatives.

#### 4.9.11 DH Energy and Sustainability Targets

The Trust will endeavour to implement environmentally sustainable facilities across all of its activities and processes with a strong focus on clinically led service redesign. The Trust has a Sustainability Management Plan (see Appendix 20), the key elements of which are described below.

As detailed within the strategic case, UHL is planning an ambitious reconfiguration programme, with the movement of services, refurbishment of existing buildings, the provision of new buildings, and the replacement of medical equipment. Arising from this is a huge opportunity for our commitments on sustainability and our carbon emission reductions to become a reality. Given that all buildings and equipment have a "carbon footprint", the Trust will utilise the various standards and guidance, to set minimum standards and stretch targets for building and equipment performance, looking to

demonstrate improvements on these through the design process and beyond into operation.

The Trust's Estates and Capital Projects team has invested in energy saving measures in recent years, including Light Emitting Diode (LED) lighting in circulation areas and variable speed controllers on heating, ventilation and air conditioning (HVAC) motors. Such initiatives have resulted in a gradual decrease in energy consumption.

The teams will continue to take the following into consideration;

- ▶ Ensure that built environments are designed to encourage sustainability, including meeting Trust and national CO<sub>2</sub> reduction targets, and to promote wellness and resilience to Climate Change in all aspects of their operation;
- ▶ Clear sustainability targets will be set for new building projects and these will be monitored following commissioning;
- ▶ Ensure that all staff, including temporary and agency workers, are aware of the Trust's commitment to sustainability and how this is influenced by the built environment;
- ▶ Estates and Procurement teams will work together to ensure that all design and building contractors are aware of the Trust's sustainability objectives and targets. Contractors will be required to demonstrate a commitment to sustainability within their own operations (i.e. by holding ISO14001 certification) and will be challenged to identify innovative and cost-effective solutions to enable the Trust to go beyond its Sustainable Development Management Plan (SDMP) targets;
- ▶ All decisions about design and build of Trust facilities must be explicit about how they encourage a broader approach to sustainability including transport, delivery of services and community engagement;
- ▶ All projects will be subject to a BREEAM assessment to ensure that sustainability considerations are incorporated into planning and design decisions from the outset. As a minimum, the new build element of this scheme will be required to achieve a BREEAM rating of "Very Good";
- ▶ Climate change resilience and adaptation will be core factors in the planning and design of Trust estate; this will be achieved through various means, for example (but not exhaustively) by ensuring that the heating and cooling capacity is designed with future climate scenarios in mind and through the specification of low water use fittings where appropriate and fit for purpose;
- ▶ Estates will seek to engage both staff and external stakeholders in all major future planning activities;

Sustainability professionals have been engaged from the early stages of design on this project to ensure that BREEAM certification of 'Very Good' can be realised. This also means that all opportunities for enhancing the overall environmental sustainability are highlighted and adopted wherever possible. This role was undertaken by Pick Everard during Royal Institute of British Architects (RIBA) stages 1 and 2, and carried forward by Gleeds from RIBA stage 3 onwards. MTX have a history of successful BREEAM certifications for both major construction and refurbishment projects and so their input

in the constructability and achievability of the sustainability opportunities in practice has been invaluable.

#### 4.9.12 Improving Building Services and Fabric

The proven benefits of improving the technical efficiency of heating plant, lighting fittings and ventilation plant will be exploited, along with improvements on controls, and metering to ensure efficiency gains are sustained. The opportunity to refurbish the building fabric and to procure new building stock will enable stringent air tightness, and insulation values to be embedded in the specifications, along with innovations of layouts and natural light and ventilation flows.

#### 4.9.13 Life Cycle Costing: Procurement of Capital and Revenue Projects

Life cycle costing will be introduced at all levels of procurement, not only on major projects. Over the term of this plan, this will have become a crucial part of assessing the efficiency of equipment and buildings and the related cost/carbon impact. While the concept of life cycle costing is generally accepted as a common-sense approach to adopt, these measures will be integrated into the purchasing mechanisms for both capital and revenue items.

#### 4.9.14 Resilience to Hazards

In planning the design for the construction projects associated with this FBC, consideration has been given of the advice in HBN 00-07 (Planning for a Resilient Healthcare Estate).

This will include ensuring resilience to:

- ▶ Electrical supplies – replacing and upgrading standby generation, converting refurbished and new areas to A and B type supplies and uninterruptable power supply facilities where appropriate;
- ▶ Water supplies – relocation of the site water supplies and replacement of the water storage tanks for the building;
- ▶ Medical Gases – Replacement of medical Vacuum system, install additional Oxygen pipelines from the Vacuum Insulated Evaporator (VIE) to the PICU for Continuous Positive Airways Pressure (CPAP) devices, and replaced/installed backup manifolds;
- ▶ Replacement of the heating system to primarily run from the site steam system, with the full backup of a gas heating system, through a common low loss header, and feeding a new domestic hot water system.

#### 4.9.15 Travel Plan

At the time of writing this FBC, the Trust's revised Travel Plan is in the process of being updated therefore the EMCHC development takes account of requirements under the previous Trust approved 'Green Travel Plan' 2013 – see appendix 21.

The LRI site is well served by public transport, including the Hospital Hopper bus service which is available to staff and public. In recent years, the Trust has completed the expansion of the public car parking facility with the new multi-storey car park at the LRI. In addition, some day case services will be moving from the LRI to the LGH and GH in Spring 2021 as a part of the ICU and associated services project (see section 2.6.2 - this will help to off-set any additional traffic and parking requirement for the EMCHC at the LRI.

Consideration of further options for the expansion of car parking facilities at LRI is an integral part of the Trust's STP Capital Bid and wider reconfiguration plan.

#### 4.9.16 Planning Permission

Planning consent is required only for the new build extension of this project. Constructive pre-application meetings have been held with the local planning authority in relation to this application, which was submitted on 11<sup>th</sup> July 2019, with consent expected to be issued in November 2019. This allows time for the Trust and the Contractor to work through and discharge any pre-commencement conditions prior to the works beginning in early 2020. It has been confirmed that the application will be determined by planning committee and not through the delegated power of the planning officer.

The contractor's site compound extends onto Jarrom Street due to the constraints of the site. Positive prior engagement with the Highways department has been undertaken to discuss the closure of a lane on Jarrom Street and this will be captured within the planning application.

The Trust are currently undertaking an archaeological dig on the new build site, in order to mitigate potential time delays, the requirement for this has been confirmed by the lead planner. The local planning authority has confirmed that these works can be undertaken prior to planning consent being granted.

Planning permission is yet to be received for this project, therefore it is not currently known if any planning conditions will be issued that require additional parking.

## 5 | The Financial Case

### 5.1. Introduction

The purpose of this section is to set out the forecast financial implications of the preferred option (as set out in the Economic Case) and the proposed deal (as described in the Commercial Case). EMCHC currently contributes circa £8 million benefit to the Trust's Income and Expenditure position. The Trust would therefore suffer significant financial loss on a recurrent basis if the service was decommissioned.

**Although there are additional costs driven by the relocation of the service and the national standards that the Trust is required to achieve, these are significantly less than the cost of losing the service.**

### 5.2. Affordability

#### 5.2.1 Capital Costs

An elemental cost plan detailing the capital costs has been developed by Rider Levett Bucknall (RLB) (the Trust's Cost Advisors and Quantity Surveyors) and translated into Full Business Case (FBC) Capital Cost forms (see appendix 22). The full report on this element of the cost plan is available in appendix 13.

The costs have been estimated as follows:

	Kensington £'000
Departmental Costs	7,016
On Costs	304
<b>Works Cost Total</b>	<b>7,320</b>
Provisional location adjustment %	
<b>Sub Total (PUBSEC 250)</b>	<b>7,320</b>
Fees	843
Non Works Costs	
Equipment Costs	3,599
Planning Contingencies	421
Optimism Bias	175
<b>Total for Approval Purposes (excluding VAT)</b>	<b>12,358</b>
<b>Inflation</b>	<b>105</b>
<b>Forecast Outturn (excluding VAT)</b>	<b>12,463</b>
Non Reclaimable VAT	1,710
<b>Forecast Outturn (including VAT)</b>	<b>14,174</b>

Table 51 Capital Cost Plan



The scheme is expected to be funded through a combination of the Trust's Capital Resource Limit (CRL) (£7.874million) and through Charitable funding (£6.3million), £2.8 million of which has already been secured.

It has been assumed that the Cath Lab equipment will form a part of the Managed Equipment Service (MES) contract and in recognition of the accounting treatment for MES contracts, the costs associated with this have been allowed for in the capital costs, as well as the assumption that VAT will be reclaimable as it is part of the MES contract.

The Trust is reviewing the position with Althea, the Trust's MES provider, to see if the equipment for the Cath Lab could be funded through the MES contract without the asset being on the Trust's balance sheet (through an agreement to rent the equipment on a sessional basis). If this was achieved the capital cost would reduce by circa £1.2 million. However this has not been assumed in the costs detailed within this FBC to provide the worst case scenario from a financial point of view.

The capital expenditure and the associated resource requirements for the next two years are broken down in the following table:

	2019/20 £'000	2020/21 £'000	Total £'000
Capital Expenditure	2,075	12,099	14,174
<b>Funded by</b>			
CRL	2,075	5,799	7,874
Charitable Donations		6,300	6,300
<b>Total</b>	<b>2,075</b>	<b>12,099</b>	<b>14,174</b>

Table 52 Capital Expenditure and Associated Resources Requirements

## 5.2.2 Costed Equipment Schedule

As detailed in section 4.5 of this business case, the majority of equipment for the PICU and ward will be transferred with the service. The majority of equipment for the cardiac theatre and cath lab extension and cardiac outpatient department cannot be transferred as the adult service will remain at the GH, therefore these needs to be purchased as new. The costed equipment schedule is detailed in appendix 12.

## 5.2.3 Income and Expenditure

The income and expenditure position is driven by the following three elements:

- ▶ Additional activity and consequential income and expenditure required to meet the minimum level of surgical activity for a congenital heart centre. Activity is assumed to grow from 375 cases in 2018/19 to 487 cases in 2021/22 (NHS England agreed trajectory);
- ▶ The delivery of minimum standards required to retain the status of a Level 1 congenital heart centre (e.g. workforce standards, minimum staffing levels, etc), impacting revenue expenditure;

- Changes in costs related to the relocation of the centre from the Glenfield to the Leicester Royal Infirmary, and the resultant splitting of adult and children's congenital heart service provision.

A summary of the additional workforce required in order to meet the NHS England Congenital Heart Disease (CHD) standards, relocation and activity is as follows:

Service Area	Additional Pay Investment 2018-2023			
	Standards & Volume Growth £	Relocation & Volume Growth £	Volume Growth Only £	TOTAL £
3.1/3.2 Congenital Cardiac Surgery	102,399			102,399
3.5 & 3.6 Paediatric Cardiology	666,194			666,194
3.7 PICU - Medical Staffing				0
3.9 ECMO		247,682		247,682
4.5 Admin			84,207	84,207
4.3 PICU (GH)	52,937		649,332	702,269
4.2 Cardiac Ward (Ward 30)			224,981	224,981
4.4 Play Specialists			16,883	16,883
4.5 Cardiac Liaison (ADULT)	62,050			62,050
4.5 Cardiac Liaison (PAEDS)	83,098			83,098
5.1 Cardiac Investigations		261,367		261,367
5.4 Perfusion		77,296		77,296
5.7 Theatre Practitioners (excl. Cath Lab)		546,044		546,044
5.6 Cardiac Anaesthetics Consultants		265,183		265,183
6.1 Pharmacy			41,870	41,870
6.2 Physio & OT			75,794	75,794
6.4 Dietetics			17,949	17,949
6.5 Pathology (Transfusion)			43,621	43,621
6.6 Clinical Engineering/ Medical Physics		10,834		10,834
6.7 SaLT			14,664	14,664
6.8 Psychology (Paeds)	76,030			76,030
6.8 Psychology (Adult)	60,148			60,148
6.9 Bone Bank	55,492			55,492
9.1 Cath Lab		270,099		270,099
	<b>1,158,348</b>	<b>1,678,505</b>	<b>1,169,301</b>	<b>4,006,153</b>

Table 53 Project Additional Pay Investment

### Additional Activity

A summary of the income and costs associated with the additional activity is detailed in the following table:

Activity	2019/20	2020/21	2021/22	2022/23
Additional Spells and associated activity	43	78	112	112
	£'000	£'000	£'000	£'000
<b>Income</b>	<b>1,670</b>	<b>3,481</b>	<b>5,065</b>	<b>5,065</b>
Additional Pay	315	1,106	1,154	1,169
Additional Non Pay	227	413	596	596
<b>Total Additional Costs</b>	<b>542</b>	<b>1,519</b>	<b>1,749</b>	<b>1,765</b>
<b>Impact on I&amp;E</b>	<b>1,129</b>	<b>1,962</b>	<b>3,316</b>	<b>3,300</b>

Table 54 Project Income and Expenditure

### Minimum standards

A summary of the costs associated with meeting the standards (not accounting for relocation) is detailed in the following table. This includes additional posts to support the service which are not related to increased activity (for example Psychologists, Cardiac Liaison Nurses). A full description is detailed within the NHS England Congenital Heart Disease standards in appendix 3.

Standards	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000
<b>Additional Pay</b>	<b>696</b>	<b>1,158</b>	<b>1,158</b>	<b>1,158</b>

Table 55 Costs associated with meeting the Congenital Heart Disease standards

### Relocation Costs

A summary of the costs associated with relocating the paediatric congenital heart service to the Leicester Royal Infirmary (and thus splitting it from the adult Cardiac Surgery and Cardiology service) is detailed in the following table:

Relocation	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000
<b>Charitable Income</b>		<b>6,300</b>		
Additional Pay	339	1,679	1,679	1,679
Additional Non Pay	0	234	792	792
Transport Costs		30		
Additional Capital Charges Treasury Funded	36	247	525	507
Additional Charitable Funded Capital Charges		70	281	281
<b>Total Additional Costs</b>	<b>376</b>	<b>2,259</b>	<b>3,276</b>	<b>3,258</b>
<b>Impact on I&amp;E</b>	<b>(376)</b>	<b>4,041</b>	<b>(3,276)</b>	<b>(3,258)</b>

Relocation	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000
Revenue adjustment for Charitable donations		(6,230)	281	281
<b>Impact on Trust Performance position</b>	<b>(376)</b>	<b>(2,189)</b>	<b>(2,995)</b>	<b>(2,977)</b>

Table 56 Costs associated with relocation of the paediatric service

A detailed analysis of the changes in costs is detailed in the workforce section 7.7 of this business case. A robust confirm and challenge process took place in order to reduce cost pressures arising from the project, which concluded with the entire workforce plan being signed off by an exec-led Star Chamber. The full workforce plan is listed in appendix 23 of this document.

## 5.2.4 Summarised Income & Expenditure (I&E) Impact

The above analysis can be summarised to show the following impact on the Trust's I&E:

Total Impact on I&E	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000
Contract Income	1,670	3,481	5,065	5,065
Charitable Income		6,300		
<b>Income</b>	<b>1,670</b>	<b>9,781</b>	<b>5,065</b>	<b>5,065</b>
Additional Pay	1,282	3,943	3,990	4,006
Additional Non Pay	227	647	1,387	1,387
Transport Costs		30		
<b>Total Additional Operational Costs</b>	<b>1,509</b>	<b>4,619</b>	<b>5,378</b>	<b>5,394</b>
<b>Impact on Operational Position</b>	<b>162</b>	<b>5,162</b>	<b>(313)</b>	<b>(329)</b>
Capital Charges on Treasury Funded assets	36	247	525	507
Capital charges on donated/charitable funded assets		70	281	281
<b>Total Capital Charges</b>	<b>36</b>	<b>317</b>	<b>806</b>	<b>788</b>
<b>Impact on Trust I&amp;E</b>	<b>125</b>	<b>4,845</b>	<b>(1,118)</b>	<b>(1,116)</b>
Revenue adjustment for Charitable donations		(6,230)	281	281
<b>Impact on Trust Performance position</b>	<b>125</b>	<b>(1,385)</b>	<b>(838)</b>	<b>(836)</b>

Table 57 Summarised Income and Expenditure Impact

This is split by the three component parts of the changes in cost as follows:

Total Impact on I&E	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000
Relocation	(376)	(2,189)	(2,995)	(2,977)
Standards	(628)	(1,158)	(1,158)	(1,158)
Additional Activity	1,129	1,962	3,316	3,300
<b>Total</b>	<b>125</b>	<b>(1,385)</b>	<b>(838)</b>	<b>(836)</b>

*Table 58 Summarised Income and Expenditure Impact split by cause of cost*

The scheme creates a cost pressure to the Trust when activity targets are achieved of £329k per annum operation costs and £836,000 in total, albeit that some of the capital charges are allowed for in the Trust's planned position as the capital is funded from operational capital. This reflects a significant cost pressure to the Trust but must be seen in the context that the service currently provides a surplus to the Trust of circa £8m per annum, which will reduce by £836k when the paediatric services moves to the LRI. The cost pressure to the Trust of losing the EMCHC activity is significantly greater compared to the reduction in surplus. The movement to I&E for the service is summarised in the following table:

EMCHC Income and Expenditure Position (including overheads)	2018/19 £'000	2019/20 £'000	2020/21 £'000	2021/22 £'000	2022/23 £'000
Income	30,276	31,946	33,757	35,341	35,341
Expenditure	(22,368)	(23,913)	(27,234)	(28,270)	(28,268)
<b>Surplus</b>	<b>7,908</b>	<b>8,033</b>	<b>6,523</b>	<b>7,070</b>	<b>7,072</b>

*Table 59 Movement to I&E for the EMCHC service*

In order to manage this affordability gap, the Trust must identify additional cost savings. It is expected that there will be some benefits arising from reduced agency and premium rate spend as a result of having a dedicated facility for EMCHC and the that any vacancy cover can potentially be managed more effectively as a result of the additional staff employed. These are detailed in sections 3.4 and 7.7.5 of this FBC.

## 5.2.5 Capital Charges

Capital charges have been based on the capital spend of £14,174m as identified in Section 5.2.1. The following has been assumed:

- ▶ Donations of £6.3 million in respect of equipment and new buildings have been assumed. This does not have an impact on capital charges but there is an adjustment reflecting the depreciation on charitably funded assets to reflect the Trust's financial position for performance monitoring purposes;
- ▶ Impairments have been assumed in respect of 25% of new build expenditure and 100% of refurbishment;
- ▶ Equipment has been depreciated over a 10 year life and the buildings over an average of 40 years;
- ▶ Capital Charges on Cath Lab equipment have been assumed as if PDC funded (there could be an opportunity to reduce this if procured on a sessional basis, as detailed in section 5.2.1).

The calculation in respect of the capital charges is shown in the following table

	19/20 £	20/21 £	21/22 £
<b>Capital Related Revenue</b>			
<b>Costs</b>			
Capital Spend	2,074,638	12,098,979	
Opening Value		2,074,638	8,812,371
Additions	2,074,638	12,098,979	
Impairment		(5,361,246)	
Depreciation		(126,489)	(505,957)
Closing Value	2,074,638	8,812,371	8,306,413
Average Assets	1,037,319	5,443,504	8,559,392
Depreciation		126,489	505,957
Dividend	36,306	190,523	299,579
Capital Charges	36,306	317,012	805,536

Table 60 Capital Charges

## 5.3. Funding

The current assumption is that capital costs of £7,874m will be funded through the Trust's operational capital programme. A further £6.3m will be funded from charitable donations. Cash flow and funding routes are detailed in section 5.2.1 of this business case.

### 5.3.1 Impact on the Trust's Balance Sheet

The Trust has assumed that it will account for the asset on its balance sheet. The impact is anticipated as follows:

	2019/20 £'000	2020/21 £'000	2021/22 £'000
Opening Value		2,074,638	8,812,371
Additions	2,074,638	12,098,979	
Impairment		(5,361,246)	
Depreciation		(126,489)	(505,957)
Closing Value	2,074,638	8,812,371	8,306,413

Table 61 Impact on the Trust's Balance Sheet

The Trust will account for the assets funded by charitable funds in line with the current accounting guidance for NHS Trusts. The depreciation on the assets funded by charitable funding will be treated 'below the line' as far as its financial performance is concerned. The charitable funds received will be recorded as income and will be treated 'below the line' as far as its financial performance is concerned.

The Trust is exploring an option to procure use of the equipment in the Catheter Lab on a cost per session basis from its MES provider. If this was realised, it will reduce capital expenditure by circa £1.35 million and will have a small increase in revenue compared to that which has been assumed.

## 5.3.2 Charitable Funding

Leicester Hospitals Charity currently has £2.8 million of charitable funds available to support this project. It is confident that by the time the charitable funds are required it will have raised the further £3.5 million, which has been assumed as funding in the business case. All of this funding will be required in 2020/21. If there is a difference between the amount of money that has been successfully fundraised and the total required for the project (£6.3 million) at the time when the Trust are setting the capital budget for 2020/21, this figure will be reserved against the Trust's operational capital budget (CRL). As the charitable funds increase, this reserve will be released to support other capital expenditure in the Trust from a reserved items list.

The way in which Trust's capital and charitable donations are treated from an accountancy perspective differ – for this reason, it must be noted that a shortfall of (for example) £1 million will have an adverse impact on the Trust's finances of circa £20,000 per annum.

## 5.4. VAT Recovery

VAT recovery advice has been provided by Ernst & Young (EY). Further advice will be sought as the project develops. The allowances for VAT recovery have been deducted from the VAT costs in the business case. The following assumptions have been made:

- ▶ The new build is a design and build (D&B) contract, therefore no VAT can be reclaimed on these fees;
- ▶ VAT on all fees associated with the refurbishment are assumed to be reclaimed;
- ▶ 40% of the VAT on refurbishment costs is assumed to be reclaimable, consistent with HMRC precedent;
- ▶ Equipment funded by charitable donations is VAT exempt and will have the required documentation to ensure this is the case;
- ▶ VAT on Equipment funded through the MES will be reclaimable as the MES provider is providing a managed healthcare facility.

## 5.5. Contingencies

### 5.5.1 Capital Cost Contingencies

Contingencies allowed for in the capital costs reflect a costed risk register (see appendix 8) and the appropriate amount of optimism bias at this stage of the development.

### 5.5.2 Revenue Contingencies

The revenue position has been worked though in detail with each of the service leads, the numbers have been challenged and reviewed through confirm and challenge sessions with all disciplines. Two executive-led Star Chambers were held in January and February 2019, at which the entire workforce plan was reviewed and challenged, to ensure a lean and efficient solution. The Star Chamber signed off the workforce plan in its entirety.



## 5.6. Sensitivity Analysis

The financial position is dependent on the level of activity assumed over the next five years. The level of activity assumed is the minimum required in order to meet the NHS England Congenital Heart Disease standards to secure the future commissioning of Level 1 Congenital Heart Disease services from UHL. The following sensitivity analysis describes the financial impact of achieving a lower level of activity. This does not consider the impact on EMCHC's viability as a commissioned unit.

The sensitivity assumes that activity reaches a limit of 430 cases in 2020/21, and does not increase beyond that, leaving a shortfall compared to the baseline of 23 cases in 2020/21 and 57 cases in 2021/22 and beyond. This shows a deterioration in the financial position over the baseline of £1.25 million. In this scenario the increased cost pressure would need to be met through increased cost efficiencies and a review of the additional expenditure committed in relocating the service. .

The following table shows the impact that a reduction in income from surgical activity has on the Trust I&E.

<b>Total Impact on I&amp;E</b>	<b>2019/20 £'000</b>	<b>2020/21 £'000</b>	<b>2021/22 £'000</b>	<b>2022/23 £'000</b>
Contract Income	1,670	2,562	2,788	2,788
Charitable Income		6,300		
Income	1,670	8,862	2,788	2,788
Additional Pay	1,280	3,545	3,546	3,546
Additional Non Pay	227	524	1,082	1,082
Transport Costs		30		
<b>Total Additional Operational Costs</b>	<b>1,506</b>	<b>4,099</b>	<b>4,628</b>	<b>4,628</b>
Impact on Operational Position	164	4,763	(1,840)	(1,840)
Capital Charges on treasury Funded assets	36	162	258	258
Capital charges on donated/charitable funded assets		70	281	281
<b>Total Capital Charges</b>	<b>36</b>	<b>232</b>	<b>539</b>	<b>539</b>
<b>Impact on Trust I&amp;E</b>	<b>128</b>	<b>4,531</b>	<b>(2,379)</b>	<b>(2,379)</b>
Revenue adjustment for Charitable donations		(6,230)	281	281
<b>Impact on Trust Performance position</b>	<b>128</b>	<b>(1,699)</b>	<b>(2,098)</b>	<b>(2,098)</b>

Table 62 Sensitivity Analysis: Income and Expenditure based on reduced activity

## 6 | The Management Case

### 6.1 Introduction

The Management Case details the project management and governance arrangements that UHL has put in place to support the delivery of this project. It sets out the following arrangements:

- ▶ Project plan
- ▶ Project management
- ▶ Project reporting and monitoring
- ▶ Benefits management and realisation
- ▶ Change management
- ▶ Risk management
- ▶ Business continuity
- ▶ Post project evaluation

Project direction and management will be determined by the Children's Hospital Project Board, overseen by the Project Senior Responsible Officer (SRO).

The costs associated with Project Management and Trust fees concerning the delivery of this project are detailed within the Full Business Case (FBC) Capital Cost forms (Appendix 22).

### 6.2 Project Plan

The project will be managed using PRINCE2 compliant methodology and project management tools such as Gantt charts, risk registers, change control and critical path analysis. The Reconfiguration Project Manager is supported by the UHL Capital Projects Team, the wider Reconfiguration Team, clinical team and external specialists and consultants as required.

#### 6.2.1 Project Programme

The project programme outlines the series of activities and milestones that are required in order to complete the project by December 2020, co-locating the paediatric cardiac service on the same site as the rest of paediatrics in order to comply with NHS England Congenital Heart Disease (CHD) standards.

The milestones for the project are set out in the following table:

Milestone Activity	EMCHC Project
Guaranteed Maximum Price (GMP) received from Construction Partner	June 2019
FBC approved by UHL Trust Board	September 2019
Full Planning Approval (required by)	December 2019
Commencement of construction	January 2020
Construction complete	November 2020

Operational commissioning	November - December 2020
Transfer of service and 'go live'	11th - 15th December 2020

Table 63: Table of Milestones

The detailed project programme can be found in appendix 24.

## 6.2.2 Contract Management Plan

The new build (theatre, catheter lab, outpatient extension) will be managed using the New Engineering Contract (NEC) option A. The Joint Contracts Tribunal (JCT) contract will be used to manage the refurbishment of the Cardiac Ward, Paediatric Intensive Care Unit (PICU) and Outpatient Refurbishment. This is detailed in section 4 of this business case.

Special advisers have been used in a timely and cost-effective manner in accordance with HM Treasury Guidance (detailed in the table below).

Specialist Area	Adviser
Financial	Sedgwick Igoe and Associates LTD
Technical (Architect) (New Build and Refurb)	AFL Architects
Technical (Mechanical & Electrical, Civils) (Refurb)	Pick Everard
Trust Cost Advisor	Rider Levett Bucknall (RLB)
BREEAM	Gleeds
VAT Advisor	Ernst and Young (EY)
Project Management (as required)	Pick Everard

Table 64: Special Advisors

## 6.2.3 Workstream Milestones and Interdependencies

The EMCHC Co-location Project has the following non time-specific interdependencies:

- ▶ Alignment to the Better Care Together Programme/Sustainability Transformation Plan (STP);
- ▶ Interface with the UHL Development Control Plan (DCP).

In addition to these, there are interdependencies with specific milestones, which will impact either on the EMCHC programme or an alternative programme if these are missed:

Project	Interdependency	Milestone	Status Update
ICU Project	Vacates ward 8 for refurbishment for the Gynaecology Assessment Unit (GAU) and Early Pregnancy	Ward 8 vacant end of September 2019	On track

Project	Interdependency	Milestone	Status Update
	Assessment Unit (EPAU)		
Planning approval	The commencement of work on the new build is contingent on Leicester City Council approving our planning application	Planning consent approved by November 2019	A number of meetings have been held with the City Council to ensure our planning application meets this milestone. Consent expected 15th November 2019.
Level 5 moves	Vacates Level 5 Kensington for refurbishment for the PICU	Level 5 vacant January 2020	On track
Gynaecology Project	Vacates Ward 1 and Ground Floor Kensington for refurbishment for the Cardiac Ward and Outpatient Department	Ward 1 vacant April 2020; Ground Floor Kensington vacant May 2020	On track
ICU Project	The EMCHC project vacates theatre capacity at the Glenfield Hospital for the HPB and Transplant service to move as a part of the ICU and associated services project	EMCHC service moves to the LRI December 2020	On track
Renal Project	The EMCHC project vacates ward space for the Renal service to move to the Glenfield Hospital following the move of the Transplant service	EMCHC service moves to the LRI December 2020	On track
Infrastructure Project	Dependency on infrastructure supporting the needs of the EMCHC, particularly the complex infrastructure and essential power required for the PICU and ECMO service. This is being managed between Project Managers.	Ongoing throughout programme	On track

Table 65 Project Interdependencies

#### 6.2.4 Office of Government Commerce (OCG) Gateway Risk Potential Assessment (RPA)

A Risk Potential Assessment (RPA) was carried out on the project in April 2019, which gave the project an overall assessment of a low risk. This is detailed in section 2.6.1 of this document.

The RPA can be found in appendix 6.

## 6.2.5 Critical Friend Review

In November 2015, the UHL Audit Committee approved a paper recommending that a Gateway (also known as Healthcheck) Review is carried out at different stages (Outline Business Case (OBC); Full Business Case (FBC) and Post Project Evaluation (PPE)) of a Reconfiguration Project, in order to give the Project's Senior Responsible Officer (SRO) (and the Trust) a level of confidence that the project is fit for purpose.

As the Trust have already committed to the project to move the paediatric EMCHC to the LRI, it was felt that this is not a decision making business case, therefore the decision was made to carry out a Critical Friend Review, in the place of a formal Gateway Review, with the following Terms of Reference (ToR):

*This Critical Friend Review will provide assurance and delivery guidance through a series of interviews and analysis of workstream documentation.*

*The team will consider if the Children's Hospital Project Phase I (EMCHC co-location) has adequately addressed areas of risk in order to ensure delivery of the project objectives to move the paediatric congenital heart service from the Glenfield Hospital to the Leicester Royal Infirmary in order to comply with NHS England standards concerning the co-location of paediatric congenital heart services with other paediatric services, and to provide the capacity in order to meet minimum levels of surgical activity.*

*The purpose of the Critical Friend Review is to provide assurance to the SRO regarding the delivery of the project to relocate the paediatric congenital heart service from the Glenfield Hospital to the Leicester Royal Infirmary (LRI). The East Midlands Congenital Heart Centre (EMCHC) provides care for patients with congenital heart disease (CHD). This is a specialised service, commissioned by NHS England.*

In June 2019, three external reviewers carried out a full Critical Friend Review on this project, on behalf of the Infrastructure and Projects Authority. The RPA forms the basis of the assessment; which was undertaken during a three day process which included interviews with the following key stakeholders:

Name	Organisation and role
Mark Wightman	Director of Strategy and Communications Project SRO
Nicky Topham	Reconfiguration Programme Director
Sue McLeod	Women's and Children's CMG Head of Operations Operational Lead
Stephanie Tate	Patient Representative
Aidan Bolger	Congenital Cardiology Consultant, EMCHC Head of Service Medical Lead
Frances Bu'Lock	Congenital Cardiology Consultant Medical Lead
Gillian Cairns	Capital Project Manager Estates Lead

Anna Duke	Children's Hospital Head of Nursing Nursing Lead
Richard Ansell	Workforce Lead
Alex Morrell	Reconfiguration Project Manager
Zoe Bliss	IT Engagement Lead
Dan Barley Tim Pearce	CMG Finance Lead Project Finance Lead
Roz Lindridge	Director of Specialised Commissioning, NHS England
Ian Scudamore	CMG Clinical Director

*Table 66 Critical Friend Review - List of Interviewees*

The next few pages of this business case detail the key findings and recommendations arising from the review.

### Key Findings and Recommendations<sup>2</sup>

The project implements national standards and aligns to national policy around congenital heart services. It is a key component in the overall reconfiguration of the LRI site especially the establishment of a Children's Hospital and so aligns with Trust strategy. NHS England confirmed the role for this site within their commissioning plans. The Review Team were told of full support from the Sustainability and Transformation Partnership.

The service provides positive contribution to the Trust's financial position and although the new standards of care will require higher staffing levels and so greater costs it is projected to contribute around £5.5m per annum after relocation. The Review Team were pleased this calculation had been properly stress tested within the Business Case as it appeared somewhat evidence light.

Of crucial significance was the evidence and the confidence that despite the upheaval of a complex set of changes the already excellent service would not be compromised and higher standards will be met for an increased number of patients,

The project is well managed and the leadership respected and obviously capable. A small number of key individuals had particularly crucial roles and some thought should be given to ensuring that they remain in position for the duration. Ensuring no individuals in crucial roles were unnecessarily over committed is important and a greater role for the PMO which resides within the wider Reconfiguration Programme might assist.

#### **Recommendation: Consideration should be given to this project making better use of the PMO in tracking and reporting.**

Overall the Review Team found the project was well positioned for a successful implementation by December 2020. The governance structures from workstream

<sup>2</sup> Given the terms of reference and nature of the project the Review Team decided not to follow the standard Gateway Headings (Policy Context, Business Case, Stakeholders, Risk, Management of Intended Outcomes, Readiness for Next Phase).

through project board to relocation programme board to trust level works well. The make up of the various governance bodies was appropriate.

The sign off for the Business Case will mark the start of the next phase as confidence grows and the commencement of the construction work in January 2020 will be a significant and visible milestone.

## Transition

The Review Team heard many explanations of the complexity of the transition, how that should be managed and what clinical safeguards must apply to movement of patients as well as relocation of staff and equipment. Some elements of the changes in care models and some of the recruitment required to increase staffing levels were already being planned and even actioned by various means some within the project scope and some funded from business as usual.

Planning for transition was at an early stage and the Review Team were unable to see any actual planning documentation.

**Recommendation: Work on the Transition Plan should be accelerated and opportunities sought for early implementation of new ways of working where possible.**

Transition planning would to some extent work backwards from the December implementation date. Opinions varied about whether any particular date for implementation was better than any other. Various issues already identified, for example delays with the build, might challenge the December date although some contingencies were present in the planning timeline.

**Recommendation: A “star chamber” style review of the Transition Plan and the implementation date should be undertaken in summer 2020.**

## Workforce

The Review Team noted that there are several clinical groups (CMGs) involved in this project and that communication, engagement and coordination across these groups has been and remains challenging despite the widespread support for the move.

The extensive workforce planning was exemplary and combined with the financial analysis that was derived from it this gave a strong basis for the Business Case. The methodology used to develop the plan and the system of challenge through the Star Chambers made the plan highly robust.

It is unfortunate that the workforce lead has left the Trust, but the project team had put in place handover arrangements to ensure service heads can build on its business intelligence as the project develops towards its go-live date.

A cultural audit had been undertaken to try to gain insights into addressing the “cultural” differences between the workforce currently based at Glenfield and other components of the workforce at LRI. The use of this kind of tool was commended.



**Recommendation: A further cultural audit should be carried out to ensure steps taken to reconcile cultural differences were being successfully addressed.**

Quarterly meetings of clinical staff across the workforce group were being held and social events were envisaged also to build the sense of a single team.

The requirement in the workforce plan for additional specialist staff presents a challenge which can be tactically mitigated. A recruitment plan is essential to manage this going forward. Greater promotion of CPD opportunities for professionally registered staff already in post within the Trust would complement a recruitment exercise to ensure the new service has the staff ratios demanded by the standards.

## Stakeholders

Strong support from the local community and stakeholders including MPs was a key part in making sure the service is able to move to sustainability. This support has been achieved by good engagement and communications as initially proposals to move a highly regarded and high performing service located in reasonably modern premises and more easily accessible into an unknown future was not universally popular.

Given the reputation as the only CQC rated outstanding service in the Trust, there is some residual risk around management of expectations. One suggestion was for focused Newsletters explaining the value of the relocation and the exciting development of a Children's Hospital.

**Recommendation: Consideration should be given to how to adapt the planned communications to address possible issues around expectations.**

The Review Team heard of strong support from staff representatives to keep the service.

**Recommendation: It would be appropriate to share the Combined Business Case and discuss through the normal staff representation processes before it is published.**

## IT and Estates

The integration of the estates workstream into the overall relocation project and the wider Children's Hospital appears to be good. The interdependencies are being managed across a small group of project managers who are working well together. The capital cost pressures have led to a change of contractor and the move to a modular build means that the costs of the project are now affordable. However, the Review Team found that the contingency amounts are below those usual for construction projects and while these have been identified as a risk and a management plan identified contingency is an insurance against the unknown.

The construction timeline appears to offer little contingency as regards time for British weather or other unforeseen circumstances. The Review Team were unable to gain insight into the construction contractor's contractual penalties for delayed delivery. There is a close working relationship (e.g. shared risk registers) between Trust and contractor which should help to minimise risk and allow early intervention.

The Review Team were of the view that should any unexpected delays be experienced then a pragmatic response from the commissioners would be expected and delays of a few weeks could be managed as the service would simply continue in its current location.

The Review Team heard very little about IT issues and no new systems or innovative use of IT was within the scope. Attention has been given to the issues around ensuring IT infrastructure would be in place when required and the Review Team heard of special efforts to effectively liaise with the IT partners (IBM, NTT, Virgin etc).

## Financial

The Review Team interviewed a broad and reflective cohort of stakeholders able to articulate their view about the progress of the project. This enabled focused discussion regarding the financial context of the strategic development of the EMCHC and the subsequent operational planning and preparation for implementation by December 2020.

The initial commitment by the Trust to NHS England to fund the new co-located service under the aegis of their capital development programme was based on a high-level and strategic view of the cost base for development. Whilst the current service generates significant funding for the Trust, the initial cost base was found to be insufficient and has created downstream pressures upon the amount of capital available to the Trust to fund the new service. Pressure on the capital fund may have increased at this juncture in the planning cycle.

The involvement, by the Trust of both internal and external stakeholder support has ensured that effective partnership working regarding service and facilities design and procurement, workforce planning and development have achieved a financial position acceptable to the Trust. Although the contingency is running at circa 9% and ideally could be more, there is a high level of confidence across the project that implementation of the EMCHC can be realised within this envelope and therefore the costs can go forward to the Trust Board for approval in September 2019.

Several measures were highlighted during the interviews as having had significant impact on the ability of the project team to enable the projected costs to remain within the capital limits set for the development. This, whilst retaining ability to meet the required clinical standards and activity levels for a co-located, children's congenital heart centre.

Some of the workforce cost issues are already being front-loaded with costs met from non-project sources to ensure the existing service can meet the new service standards. The Trust is to be praised for such quick action and encourage to ensure this continues.

The Initial traditional build approach was unaffordable. A new delivery partner was procured. The resultant design, identified alternative options to ensure that it could obtain an acceptably designed facility, supported by financial projections within capital constraints.

MTX has subsequently been procured and have provided a modular design solution in parallel to a budget requirement within Guaranteed Maximum Price. Continuing strong project management is still necessary as any increased costs could lead to reputational damage to the Trust. Any potential for slippage into a further financial year may impact

on the Trust's wider reconfiguration plans, specifically regarding the availability of capital and loss of income.

The issues posed by the severe (pan NHS) restrictions on capital were a recurrent theme and this has added additional risks that are disproportionate to the actual amounts of money involved. The Review Team heard that all options had been carefully examined and even that one possibility (using flexibilities through the Managed Equipment Service) may offer some small but welcome improvement in the position.

### Response to ToR

The Review Team were not requested to provide a Delivery Confidence Assessment but were asked through the terms of reference to consider if the Children's Hospital Project Phase I (EMCHC co-location) has adequately addressed areas of risk in order to ensure delivery of the project objectives to move the paediatric congenital heart service from the Glenfield Hospital to the Leicester Royal Infirmary and to provide the capacity in order to meet minimum levels of surgical activity.

The finding was that there was evidence to show that the risks were understood and being addressed, through effective governance and project management. No additional unmanaged risks were identified. Meeting the required minimum levels of surgical capacity depended on some complex issues in the wider health system and in clinical networks so any assessment by the Review Team would be subjective. The issues around expanding capacity were already being addressed and the trajectory to meet this aspect of the standards was part of transition planning (though at an early stage).

### Critical Friend Review Conclusion

The expected approval of the Business Case will mark a major achievement by the project team given the difficult history. The Project is crucial to the Trust and as such has strong support. There have been delays largely due to the financial position but current plans are credible. It is well managed with an excellent workforce plan and a commendable inclusive approach to stakeholders.

Plans are in place to give confidence in successful delivery in line with a very tight cost envelope and on time. Margins are tight and contingencies low but the expectation is that should risks materialise into cost overrun or further delay the impact will be relatively minor and service quality will not be compromised.

### Critical Friend Review Action Plan

An action plan has been developed to ensure all the recommendations identified are followed through within the required timescales.

## 6.2.6 Post Project Evaluation (PPE)

The arrangements for Post Project Evaluation have been established in accordance with best practice. The Trust is committed to ensuring that a thorough and robust Post Project Evaluation is undertaken at key stages in the process to ensure positive lessons can be learned from the project that can inform processes and future projects undertaken.

The diagram below outlines the framework and timescales that will be adopted in the undertaking of PPE associated with this project.

Post Project Evaluation: Framework for Delivery							
NHS Standard project & business case planning	FBC	Construction Phase	Post Project Evaluation Stage				
			← PER →				
			POE	PIR			
			3 month	6 month	1 year	2 year	5 year
Post Project Evaluation	Review previous PPE for lessons learned						
Stage 1: Evaluation Plan	✓						
Stage 2: Project Delivery			✓				
Stage 3: Initial PPE					✓		
Stage 4: Follow up PPE						✓	✓
A	NHS Improvement- Project Completion Report			✓			
B	Design Quality Indicator appraisal (DQI for Health)	Stage 3 Detailed design		Stage 4 Ready for Occupation	Stage 5 In Use		
C	Building Research Establishment Environmental Assessment Model (BREEAM)	Interim Certificate		Post Construction Assessment	Final Cert		
D	Project Gateway Review (Internal or External)	Gateway 3 Investment Decision	Gateway 4 Readiness for service	Gateway 5 Benefits Evaluation			
E	Building Information Modelling (BIM)	Data Exchange Construction Information Model	Data Exchange Operation & Maintenance Information Model	Data Exchange Post Occupation Validation Information & on-going operation & management			
F	NEC 3 Construction Contract (where applicable)			Post construction assessment			
G	Government Soft Landings (GSL) Environmental, Financial, Performance, Functionality & Effectiveness	GSL 4.0 Design	GSL 5.0 Build & Construction	GSL 6.0 Handover	GSL 7.0 POE.1	GSL 8.0 POE.2	GSL 9.0 POE.3

Figure 12 Framework for delivering post-project evaluation

## 6.2.7 Post Occupancy Evaluation

Post-Occupancy Evaluation (POE) is the process of obtaining feedback on a building's performance once in use. POE is valuable, particularly in healthcare environments, where poor building performance will impact on running costs, occupant well-being and business efficiency.

Post-Occupancy Evaluation will:

- Highlight any immediate teething problems that can be addressed and solved;

- ▶ Identify any gaps in communication and understanding that impact on the building operation;
- ▶ Provide lessons that can be used to improve design and procurement on future projects;
- ▶ Act as a benchmarking aid to compare across projects and over time.

The POE for this project will be procured through the BREEAM Post construction assessment and certification, Building Information Modelling (BIM) and Government Soft Landings (GSL).

### 6.2.8 Post Implementation Review (PIR)

This review will ascertain whether the anticipated benefits have been delivered and will take place 12 months following the delivery of the project and will be monitored on an annual basis in subsequent years.

The Trust will undertake a Gateway 5 Benefits Review or similar. This will be undertaken either by a nominated internal team or will be procured externally.

### 6.2.9 Project Evaluation Reviews (PERs)

Within UHL, PERs have been undertaken for the Emergency Floor Project (phases I and II) and the relocation of Vascular services. Key learning from these projects, which is being applied within this project, is detailed below.

The Phase I Emergency Floor review was undertaken by the Trust's Internal Auditors PWC through a series of interviews.

The process adopted within the vascular project was one of a SurveyMonkey questionnaire, which was sent to a wide range of stakeholders of the project. The questionnaire covered a number of themes, which had been identified within the process for the EF project:

- ▶ Delivery enabling plans;
- ▶ Clear scope;
- ▶ Governance-enabling decision making;
- ▶ Smart financing;
- ▶ Agile change control;
- ▶ High performing teams.

This was followed up by a Vascular workshop, which considered key factors that had arisen in more detail. A report with key actions and lessons learned was submitted to both the Reconfiguration Board and Executive Strategy Board.

In February 2019, a workshop was held to review the Phase II Emergency Floor project. The key outputs from the Phase II Emergency Floor workshop that could be applicable to the EMCHC project are listed below:

- ▶ Defining the scope:
  - Ensure that the interdependencies for delivery and benefits are clearly articulated in the FBC; and that there is equal focus on these

interdependencies with a governance process in place to deliver this change

- ▶ **Models of Care / SOPs / Workforce:**
  - When there are number of parallel workstreams that could impact on the development of the SOPs; a single management group and communication channel is needed to pull the outputs together to ensure a tangible combined impact assessment;
  - A review of the models of care should be undertaken earlier in the process by senior clinicians and Executives to provide confirm and challenge with the team and Heads of Service in order for the Star Chambers to run more smoothly;
  - The Star Chamber should be scheduled ahead of time to cover more than 1 meeting – there are inevitably issues that are raised that will need further debate and presentation;
  - Recommend that the Medical Director reviews clear evidence of transformation / change at least 6 weeks before opening to ensure the organization is ready; prior to the agreement to ‘go live’
- ▶ **Governance / Project Management:**
  - Ensure a PID is developed and agreed at the onset of the construction stage outlining very a clear governance process;
  - Whilst formal project management processes are essential in the management of a project, a giant master plan should be considered to track progress, since it is visually easier to understand by staff;
  - When a project has a number of phases, it is essential that the project is considered throughout its life so that change control and expenditure of contingency is managed across the project;
  - Co-locate as many of the project team as possible – e.g. the IT team;
  - Continuity in the project teams is helpful; e.g. the SRO;
  - Don't lose the skills developed by clinical teams in delivering the projects. Use the expertise to invigorate the organization to engage in future projects;
  - Ensure assurance criteria is used for all major projects to give levels of assurance to exec team.
- ▶ **Roles and Responsibilities:**
  - The PID developed at the beginning of the project should ensure that roles and responsibilities are clearly defined. Review this at key milestone stages;
  - Review the project team (including the clinical leaders) to identify any skills gaps that need to be filled;
  - Undertake an induction session for the clinicians involved in the project to explain the structures/ terminology etc.;
  - Where the clinical leaders are not in a formal management position, ensure that there is an agreed decision making process with clear lines of accountability and agreement on empowered decision making;



- Where possible, ensure there is continuity in the project team and SROs during the life of the project;
- Consider the role of the existing CMG management team in the commissioning phase of the project.
- ▶ Resources:
  - Ensure project development is robust for all phases of a project to ensure resources reflected in the business case are accurate;
  - Ensure adequate back fill resource is provided to release the clinical time;
  - Early engagement of IT is essential to ensure agreement of the IT solution.
- ▶ Technical and Construction:
  - Ensure that management of the construction process is within UHL; supported by 'clerk of works' with adequate time to undertake the role properly;
  - More careful commissioning of drains: Camera down every drain to ensure clear runs.
- ▶ Communication:
  - Early engagement of the Communications Team is essential;
  - Since these projects are spending public money, time must be planned to show the media new facilities.
- ▶ Commissioning / Preparing for the Move / Business As Usual (BAU):
  - Allow adequate time for the deep clean AFTER staff inductions and equipment fit outs;
  - Ensure that there is full communication about what is going to happen to space that is being vacated: whether it is to be decommissioned, or re-purposed so that it can be appropriately planned;
  - Ensure the decommissioning process is adequately resourced;
  - Any change to a move date should be agreed at least 6 weeks in advance to ensure staff leave and the move can be appropriately managed;
  - Agree an IT snagging period and dedicated support;
  - Set up a WhatsApp group at 'go-live' to link the project team allowing immediate communication between the team.

This project will include the above actions within its management process.

A similar process of PER will be undertaken for this project with the adoption of questionnaires and workshops with key stakeholders.

## 6.3 Project Management Arrangements

### 6.3.1 Project Management Budget

The resources required for full project management have been developed by the project team. These costs are accounted for within the capital costs of this project, and through the wider Reconfiguration staffing budget.



### 6.3.2 Project Management and Governance Structure

Project Governance arrangements have been established to reflect national best practice guidance and the Trust's own Capital Governance Framework. This is shown in the following diagram:

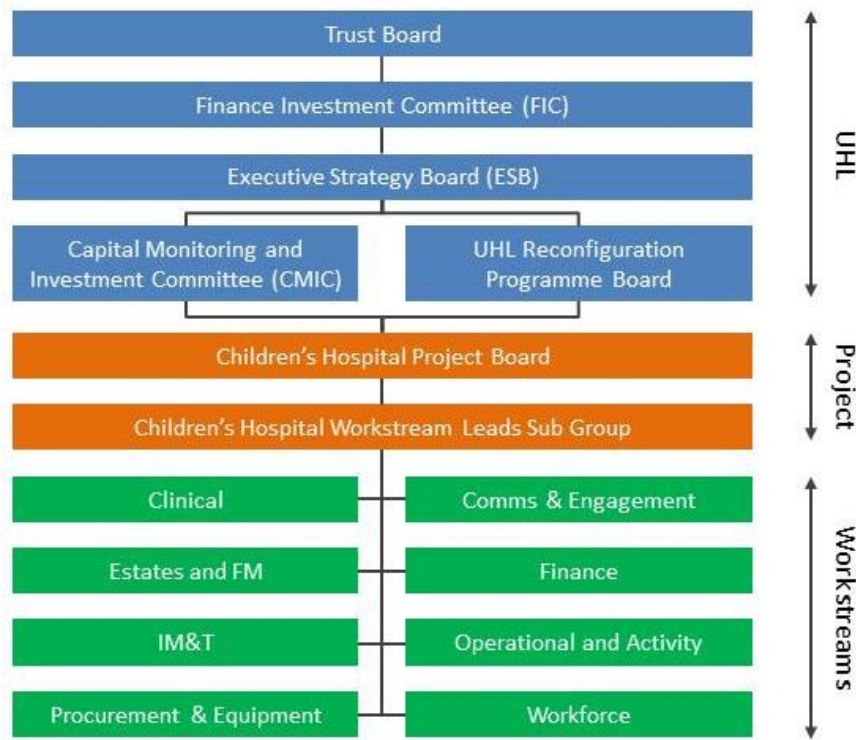


Figure 13 Project Management Structure

The Full Business Case (FBC) will require approval from the Children's Hospital Project Board, the Reconfiguration Programme Board, Executive Board, Finance Investment Committee (FIC) and the UHL Trust Board.

This Business case does not require external approval since the value is less than £15m; and the source of capital funds is internal.

These Boards and Committees have membership from Executive and Non-Executive Directors, as well as key stakeholders and Patient and Public Involvement (PPI) representatives. The UHL Chief Executive chairs the Executive Board, FIC is chaired by the UHL Deputy Chairman and the UHL Chairman chairs the Trust Board.

### 6.3.3 Project Management Methodology

The project will be managed using PRINCE2 compliant methodology and project management tools such as Gantt charts and critical path analysis.

The Reconfiguration Project Manager is PRINCE2 accredited and has passed the APMG International Better Business Case Foundation Examination.

The Reconfiguration Project Manager and Estates Project Manager are both New Engineering Contract (NEC) 3 Engineering and Construction Contract (ECC) Project Manager accredited.

### Project Resources

The project has been resourced during the delivery phase to ensure that it can be delivered in accordance with the project programme. This includes an allowance for clinically backfilling a matron to ensure that dedicated clinical time can be given the time to develop the Standard Operating Procedures (SOPs) and Operational Commissioning plans to ensure that they are ready for the service to move upon completion of the project and in the period immediately following the move.

Capital is identified within the cost plan for an external contract administrator, who will also provide assistant project management support to the Estates Project Manager. The Estates team will manage the tender process, the detail of which is outlined within the commercial case of this business case.

## 6.4 Project Reporting and Monitoring

Monthly progress (highlight) reports are submitted to the Project Board and then the UHL Reconfiguration Board for review and then onward reporting and management to the UHL Executive Strategy Board.

The project will subsequently move towards the creation of an operational commissioning team(s). This will comprise management and clinical representatives who are skilled to ensure the production of a detailed implementation plan to operationally deliver the enabling and service moves required for the paediatric element of the EMCHC to be transferred from the Glenfield Hospital to the LRI, and to ensure the clinical sustainability of the Adult service at the Glenfield. The team(s) will operate within the existing governance of the project.

The end stage of the project will result in the completion, handover and commissioning of the new facilities. The Project Board is responsible for providing assurance that the project has been delivered in terms of product, programme, quality and budget in line with the business case.

### 6.4.1 The Children's Hospital Project Board

#### Project Senior Responsible Officer (SRO)

The Children's Hospital Project Board is chaired by Mark Wightman, the Project SRO. Mark Wightman started out life as a journalist and after spending 20 years working in the media, latterly as the Managing Director of a FTSE 100 company, he switched careers. After a brief stint with Local Government and Primary Care, Mark joined Leicester's Hospitals as Director of Communications. In his 13 years with Trust Mark has added, external relations, marketing, engagement and integration to his portfolio. In 2018 Mark became the Trust's Director of Strategy & Communications and is now responsible for the strategic development of the Trust.

#### Project Board Key Roles and Responsibilities

The project reports to the Children's Hospital Project Board. The Project Board meets on a monthly basis, and its key roles and responsibilities include:

- ▶ Responsibility for delivering the project within the parameters set within the Project Initiation Document (PID);
- ▶ Providing high level direction on stakeholder involvement and monitoring project level management of stakeholders;
- ▶ Providing the strategic direction for the project;
- ▶ Management and escalation of risk;
- ▶ Ensure continued commitment from stakeholders;
- ▶ Key stage decisions;
- ▶ Progress monitoring;
- ▶ Budgetary control and management;
- ▶ Change control management.

### Project Board Membership

Membership and key individual responsibilities for the Children's Hospital Project Board is outlined within the following table.

Role	Name and Position	Key Responsibilities
Senior Responsible Officer	Mark Wightman (Director of Strategy and Communications)	Responsibility to the Reconfiguration Board for delivery of the project to meet its stated terms of reference. Chair of the Project Board.
Director of Reconfiguration	Nicky Topham (Director of Reconfiguration)	Responsibility to ensure that the Project is developed to align with the plans for the UHL Reconfiguration Programme. Line Management responsibility for the delivery of the Project.
Senior Clinical Lead - Medical	Ian Scudamore (Clinical Director)	Overall clinical responsibility for the models of care included within the business cases, and used for capacity and workforce planning. Lead for clinical challenge of models of care.
Clinical Lead – Medical	Aidan Bolger (EMCHC Head of Service)	Responsibility for ensuring that the design process reflects clinical needs and requirements within this FBC, including responsibility for dispute resolution within the service (if this situation arose). Responsibility for the delivery of a sustainable workforce model for inclusion with the FBC.
Clinical Lead – Medical	Frances Bu'Lock (Paediatric Cardiologist)	
Clinical Lead – Nursing	Anna Duke (Children's Hospital Head of Nursing)	Responsibility to ensuring that the clinical outputs of the project are aligned to guidance and standards.
Operational Lead	Sue McLeod (W&C Head of Operations)	Overall responsibility for the development and sign off of capacity and workforce plans.
Reconfiguration Project Manager	Alex Morrell (Senior Reconfiguration Project Manager)	Day to day responsibility for the development of the project, within the delegated role permitted by Project Board, including delivery of the business case and stakeholder management.

Role	Name and Position	Key Responsibilities
Estates Lead	Gillian Cairns (Senior Capital Project Manager)	Responsible for delivering the design solution upon receipt of suitable project brief and offering Estates expertise to the project. Responsible for reporting to the project board and delivery of the build stage
Public and Patient Involvement (PPI) representative	Stephanie Tate / Peter Newman (Patient Partner)	Lead PPI representative working with the Project Manager to ensure PPI is integral to the project.
Finance Lead	Tim Pearce (Reconfiguration Finance Lead) Dan Barley (CMG Finance Lead)	Responsible for translating plans into cost and benefits and maintaining financial challenge around assumptions.
Workforce Lead CMG HR Lead	Richard Ansell (Reconfiguration Workforce Lead) Elizabeth Stirzaker (W&C HR Lead)	Responsible for developing and challenging workforce plans and assumptions and providing strategic workforce context.
Organisational Development (OD) Lead	Stephen Gulliver (Senior OD and Improvement Manager)	Responsible for developing and delivery the project's OD strategy.
Charitable Funding Lead	Lisa Davies (Director of Leicester Hospitals Charity)	Responsible for co-ordinating the charitable fundraising appeal in order to ensure that the charitable income for the project meets its income target.
Lead Commissioner Specialised Commissioning, NHS England	Jude Bowler / Dom Tolley (Local Service Specialist)	Key project stakeholder, responsible for providing cohesion between project plans and specialised commissioner expectations.
Lead CCG Commissioner for Women's, Children's and Mental Health	Melanie Thwaites (Associate Director Children and Families)	Key project stakeholder, responsible for providing cohesion between project plans and local commissioner expectations.

Table 67: Project Board Roles and Responsibilities

## 6.5 Benefits Management and Realisation

The delivery of benefits will be managed through the Children's Hospital Project Board.

The Benefits Realisation Plan is detailed in appendix 25 and includes detailed plans for each benefit covering the following:

- ▶ A description of the benefit;
- ▶ The baseline and target measure of the benefit;
- ▶ A summary of how the benefit will be achieved;
- ▶ Details of the timescale over which the benefit will be achieved;
- ▶ Identification of the lead directors responsible for delivering benefits.

Some of the key benefits to be realised are:

- ▶ Co-location with the wider paediatric service;
- ▶ Capacity to meet the activity detailed within the NHS England trajectory;
- ▶ Improved PLACE scores;
- ▶ Improved infection prevention.
- ▶ Improved retention and recruitment of staff by providing the facilities in order to protect the future of the service.

These are aligned with the cash and non-cash releasing benefits that have been outlined in more detail in the Economic case of this business case.

## 6.6 Change Management

Change management associated with the project will be managed through the Project Board, under the chairmanship of the Senior Responsible Owner (SRO). Day to day change management issues will be discussed at the project workstream level and any resultant contract and/or cost changes will need to be approved by the Project Board.

The purpose of this plan is to outline the tasks required to deliver the service moves from construction through to the service moves. It currently includes high level tasks and milestones to be delivered through the process. Its detailed development and delivery will be overseen by the Project Board.

### 6.6.1 Project Change Control

The Trust has introduced a new Change Management and delegated authority policy – see appendix 26 – to promote consistency across the programme and remove risk of change outside of the governance structure of each project. This will impact upon all business cases where there is a need to:

- ▶ Change assumptions in an approved business case;
- ▶ Change costs impacting the capital plan;
- ▶ Change the reconfiguration delivery programme;
- ▶ Change scope which impacts upon another project.

This process will require any changes detailed above to be authorised by the Project Board, followed by the Reconfiguration Board.

## 6.7 Risk Management Strategy

UHL's approach to risk management, in accordance with its Board Assurance Framework, the Capital Investment Manual and HM Treasury Green Book, is designed to ensure that the risks and issues are identified, assessed and mitigation plans developed in a risk management plan. All risks have a responsible owner identified.

The risk management approach for the programme is in accordance with PRINCE2 methodology.

Work stream leads have undertaken an initial identification and assessment of the risks to the project across the following themes:

- ▶ Estates
- ▶ Finance
- ▶ Equipment
- ▶ Operational
- ▶ Workforce
- ▶ IM&T

The project team reviews each risk to provide a consensus scoring.

Additional discussion is then had in order to update the mitigations, the current and target RAG rating (Red-Amber-Green), and the decision regarding the requirement to escalate to the CMG risk register. The risk register also details who is responsible for the management of risks and the required counter measures.

### 6.7.1 Risk Management

The Project Team (involving all workstreams) has undertaken a risk assessment to identify the major areas of risk and highlighted the controls currently in place, or to be put in place in order to mitigate the risks.

The Trust monitors the risks that may affect the delivery of the project. Project risks are managed through the risk register (appendix 7). This is a live document and as such will be amended as the project progresses. The project workstreams will monitor the risk and actions and will collectively review alterations to ensure a consistent approach. The risk register is reviewed at the Project Board, with the highest rated risks are escalated to the Reconfiguration Board on a monthly basis via the highlight report.

### 6.7.2 Project Risk Register

The full project risk register is appended to this business case (appendix 7).

A fully costed Estates risk register has been developed with input from the Trust's cost advisors (RLB) and principle contractors. This has been used to inform the contingency levels for the project and is attached as appendix 8.

## 6.8. Publication of the Business Case

This business case and its appendices will be publicly available following approval at the UHL Trust Board.



## 7 | The Clinical Quality Case

### 7.1. Introduction

The Clinical Quality Case sets out how the proposed investment will improve the clinical quality of the Trust's services. It describes how the development will improve patient safety and experience by providing a clinically functional environment that facilitates efficient patient flows, as well as providing the clinical capacity to deliver the minimum levels of surgical activity as prescribed by NHS England in the Congenital Heart Disease standards over the coming years.

The clinical leadership and engagement of clinicians has been fundamental through the life of the project to date and will continue through to the operational commissioning of the new facilities. They have supported the delivery of a design solution that satisfies national best practice guidance and standards and improves the quality of the environment for patients, family and staff whilst delivering a cost effective solution. The design solutions are detailed within this section.

UHL are committed to improving the quality and safety of care for patients. The quality commitment articulates three key aims:

- ▶ Provide Effective Care – Improve Patient Outcomes. “To deliver evidence based care/best practice and effective pathways and to improve clinician and patient reported outcomes”
- ▶ Improve Safety – Reduce Harm. “To reduce avoidable death and injury , to improve patient safety culture and leadership and to reduce the risk of error and adverse incidents”
- ▶ Care and Compassion – Improve Patient Experience. “To listen and learn from patient feedback and to improve patient experience of care”

This case has been developed with a view to enhancing delivery of the quality of care with a view to:

- ▶ Improving patient pathway management, reducing the clinical risk and discomfort through the emergency care pathway
- ▶ Improving the patient experience
- ▶ Enhancing Patient safety and reducing clinical risk

### 7.2. Clinical Strategy and Commissioning Intentions

#### 7.2.1 Philosophy and Principles of Care

The EMCHC operational policy describes the philosophy and principles of care as follows:

EMCHC aims to lead the provision of the latest cardiac treatments, which have the best cardiac outcomes for children and adults, regionally and nationally.

High quality care delivered by a well-trained and educated workforce resourced to meet the projected case mix and workload:



- ▶ Flexibility of resources, both physical and human, to deal with changing workloads and case mixes;
- ▶ Care according to clinical guidelines that are compliant with current national and international guidelines where relevant (stored on UHL Policies and Guidelines Library);
- ▶ All patient management in line with NHS England standards and Seven Day Services Clinical Standards Policy;
- ▶ Design for patient safety, privacy & dignity, including age-specific facilities for children, adolescents, adults and adults with additional needs;
  - Minimisation of patient, staff and goods moves;
  - Minimisation of steps in processes/hand-offs;
  - Integration of diagnostic and assessment processes;
  - Optimised use of technology, including integrated IT (iCRIS, PACS & EPR);
- ▶ Requirements to deliver cardiac care must acknowledge effective delivery of paediatric transport services and ECMO;
- ▶ Using the skills and expertise of professional staff flexibly, with joint training in order to transfer skills;
- ▶ Access to senior clinical opinion from the earliest point in the patient pathway and onwards;
- ▶ Pathway-led care across the East Midlands Network with standardisation of patient pathways integrating the input of all care practitioners (including fetal medicine specialists, paediatricians with expertise in cardiology, cardiac physiologists, and others);
- ▶ Improved junior doctor / nursing training and improved skill mix that attracts high quality recruitment and retention;
- ▶ Provision of high quality family centred care with appropriate parent accommodation.

## 7.3 Design and Buildings

### 7.3.1 Design Development and Solutions

#### Theatres and Cath Lab Department

Based on the capacity planning, an additional cardiac theatre and interventional cardiology (catheterisation) lab are required in order for the service to move to the LRI. Initially there was a plan to build two operating theatres (one cardiac theatre, and one with mono-plane imaging) as well as a bi-plane catheterisation lab (cath lab). However, this strategy did not provide value for money when considering projected demand for a second operating theatre. For this reason, the decision was made to build one paediatric cardiac theatre and one bi-plane cath lab, the latter with a bespoke design to allow surgical procedures to be carried out. This included full consideration of ventilation, operating table and infection prevention issues.

The clinical models of care and adjacencies (appendix 10) for the cardiac theatre and cath lab were initially developed with the clinical teams, and have been reviewed and refined through the design development process. The new combined cardiac theatre and cath lab department is a change to the model of care that is currently in place at the Glenfield Hospital, where the two are in separate physical locations. Robust clinical operational policies reflecting the needs of patients have been developed to inform the design brief and solution, which have been based on a combination of Health Building Note (HBN) guidance, and decisions made arising from a thorough clinical design

engagement process. No HBN exists relating to a combined theatre and cath lab department, therefore strong clinical engagement has been particularly important to ensure that the needs and requirements of users is met.

There is a complex structure of clinical stakeholders for the cardiac theatre and cath lab and input has been sought from the following groups of staff: surgeons, cardiologists, anaesthetists, operating department practitioners (ODPs), perfusionists, radiographers and imaging leads, physiologists, cath lab nursing, recovery nursing, infection prevention and pharmacists. In addition to this, support from non-clinical staff has included Radiation Protection, Decontamination, and Facilities Management (FM), who work within the clinical areas.

The design solution for the cardiac theatre and cath lab is a new-build department on Level 1 of the Kensington Building (signed off plans are detailed in appendix 27). This is physically adjacent to theatres 17 and 18, which will continue to be used by the obstetrics service until the point at which the rest of paediatrics moves into the Kensington Building. At this juncture, the entire operating department has the potential to be remodelled to deliver a paediatric theatres department for all children's surgical activity. The department has been designed so that it can operate functionally as a standalone department until this point and therefore contains the necessary clinical support space, including anaesthetic rooms and recovery bays, storage, control room, dirty utility, scrubs, decontamination facilities for perfusion equipment and transoesophageal echocardiogram probes, waste disposal, pharmacy store and staff facilities. The gas cylinder store will be shared with theatre 17 and 18, and this has been agreed with both theatre teams. The staff changing rooms for the cardiac theatre and cath lab will be in new facilities just outside of the department and this has been agreed with the clinical and infection prevention teams.

All derogations have been supported and signed off by the clinical leads for the project, the Head of Estates and the Trust's Lead Infection Prevention Consultant, Dr David Jenkins and approved by the Children's Hospital Project Board. These are outlined in the schedule of derogations. The Trust design brief was to have a fully compliant design for the Theatres and Cath Lab but certain items have been modified through the design process with all relevant stakeholders and have been signed off as clinically and operationally sound accordingly.

The Estates embedded Senior Trust Infection Prevention Nurse has been fully engaged in the design process to date and has advised on various items, including the use of lever handles on sinks as a Trust and clinical preference, rather than the installation of sensor taps for example.

The signed off derogations are in appendix 17.

### Paediatric Intensive Care Unit (PICU)

In order to support congenital heart activity (including the requirement to increase surgical activity) at the LRI, 12 paediatric intensive care beds are being built. This allows for futureproofing for increased activity over and above that required to reach the minimum levels of surgical activity, and for times when demand is higher than usual, e.g. winter surges. This includes the provision for Extra Corporeal Membrane Oxygenation (ECMO) Level 4 Intensive Care, which takes place on the PICU. A Children's Intensive Care Unit (CICU) already exists on the LRI site, and initial plans were to create a combined unit, as it was acknowledged that this would bring

considerable staffing benefits. However, this was deemed to be unaffordable to the scheme as a part of Phase I, therefore the scope of this project was changed to deliver the cardiac intensive care unit only, with plans to develop a combined unit for all paediatric intensive care as a part of Phase II (the wider Children's Hospital Project). Nevertheless, same site colocation will deliver considerable increases in visibility and adjacency of clinical staff over current arrangements.

The clinical models of care and adjacencies (appendix 10) for the paediatric intensive care unit were initially developed with clinical teams from both the LRI and the Glenfield in an effort to ensure consistency in planning across the two facilities. This is important as staff work across both units. These have been reviewed and refined through the design development process. Robust clinical operational policies reflecting the needs of patients have been developed to inform the design brief and solution, which have been based on a combination of Health Building Note (HBN) guidance, and decisions made arising from a thorough clinical design engagement process.

The clinical stakeholder work included input from the following groups of staff: intensivists, intensive care nurses (matron, sisters), ECMO staff, medical physics technicians, physiotherapists, occupational therapists, play therapists, infection prevention and pharmacists. In addition to this, support from non-clinical staff has included Radiation Protection, Decontamination, and Facilities Management (FM), who work within the clinical areas concerned.

The design solution for the PICU locates the unit in retained estate on level 5 of the Kensington Building (signed off plans are detailed in appendix 11). This involves a complete refurbishment of existing office space to create a 12 bedded unit, consisting an 8 bed bay and 4 side rooms. One of the side rooms will also be a simulation room, to allow teaching on the unit. Two of the side rooms are isolation rooms, both with a ventilated lobby to allow either infectious or immune suppressed patients to be cared for. The unit will have a dedicated nurses' base, dirty utility, clean utility/fluids store (including controlled drugs store), medical physics workshop, storage (ECMO, consumables, ward equipment, theatre equipment, linen), staff facilities (staff room, staff change) and two offices. Just off the unit is an on-call room for the consultant on call – the wider strategy for on-call provision on the LRI site has been considered within the development of this project. A parents' lounge and separate quiet room are located by the entrance to the unit, allowing families and carers the opportunity to have a break from the unit without there being too great a physical separation.

A dedicated lift call system will be installed onto one of the lifts for rapid transfer between the PICU, the Theatre and Cath Lab, Cardiac Ward, and down to the Basement Level to access the wider hospital (Children's Emergency Department, CT and MRI facilities).

Due to the specialist, complex and potential long stay nature of the ICU environment, the needs of the patient and staff are particularly paramount and this is reflected within the design. Examples include:

- ▶ Design maximises natural light;
- ▶ Four side rooms, of which two are isolation rooms to meet IP requirements;
- ▶ The use of high quality finishes within the unit will play an important role in ensuring a safe and clean environment, and will include:

- Extensive wall protection throughout
- High quality compact laminate for nurses station and work surfaces

The large nurse base is in the central core of the unit, allowing maximum observation across all clinical areas.

All derogations have been supported and signed off by the clinical leads for the project, the Head of Estates and the Trust's Lead Infection Prevention Consultant, Dr David Jenkins and approved by the Children's Hospital Project Board. These are outlined in the schedule of derogations. The scheme is being delivered within the existing footprint of the Kensington Building and the Trust have strived to provide a fully compliant design. However due to the constraints of working within a confined layout and space a number of derogations have been established and agreed with all stakeholders.

The Estates embedded Senior Trust Infection Prevention Nurse has been fully engaged in the design process to date and has advised on various items, including the design solution for the two isolation rooms and protected lobbies.

The signed off derogations are in appendix 17.

### Paediatric Cardiac Ward

A Paediatric Cardiac Ward is required at the LRI in order to provide inpatient congenital heart activity (including the requirement to increase surgical activity). Initial activity modelling demonstrated the requirement for 20 beds, however, bed occupancy rates were reviewed with the senior medical and nursing management allowing the safe reduction to 17 beds whilst still providing capacity to allow for future growth. This is a reflection of the sustained reduction in Average Length of Stay (ALOS) in line with both national trends and the EMCHC network approach to 'care closest to home'. The cardiac ward will provide care for all inpatients (aside from those requiring level 3 critical care) and for day case patients (primarily patients requiring an interventional or diagnostic catheter procedure). Three of the beds (a two bed bay and a side room) have medical gases and staffing levels factored into the workforce plan to allow level 2 high dependency patients to be looked after. This will improve flow out of the PICU and allow these step down patients to be looked after in a more appropriate environment.

The clinical models of care and adjacencies (appendix 10) for the cardiac ward have been clinically driven, reflecting current practice and opportunities to transform models of care. These have been reviewed and refined through the design development process. Robust clinical operational policies reflecting the needs of patients have been developed to inform the design brief and solution, which have been based on a combination of Health Building Note (HBN) guidance, and decisions made arising from a thorough clinical design engagement process.

The clinical stakeholder engagement included input from the following groups of staff: paediatric cardiologists, cardiac nurses (matron, sisters), cardiac liaison nurses, medical physics technicians, physiotherapists, occupational therapists, play therapists infection prevention and pharmacists. In addition to this, support from non-clinical staff has included Radiation Protection, Decontamination, and Facilities Management (FM), who work within the clinical areas.

The design solution locates the cardiac ward on Level 1 of the Kensington Building (signed off plans are detailed in appendix 28). This is the same level at the Cardiac

Theatre and Cath Lab department, allowing quick movement of patients to the theatre and cath lab, and transfer back from the cath lab following recovery (post-surgery patients go directly to the PICU). The beds are in a six bed bay, a four bed bay, a two bed bay (HDU) and five side rooms (1 HDU), four of which are en-suite. The unit will have a dedicated nurse's bay close to the HDU beds, a reception at its entrance, patients' and parents' waiting area, a clean utility, dirty utility, treatment room, bathroom and staff room with small shower room off. There is a large play room, with tables and chairs and a large area for soft play, and a smaller adolescent room with computer entertainment.

The cardiac ward also provides the location for four parents' bedrooms, a parents' lounge (including kitchen facilities), quiet room and an office for the charity Heartlink who are funding much of the parents' space, as well as the play room.

All derogations have been supported and signed off by the clinical leads for the project, the Head of Estates and the Trust's Lead Infection Prevention Consultant, Dr David Jenkins and approved by the Children's Hospital Project Board. These are outlined in the schedule of derogations. This scheme is a refurbishment of an existing ward and therefore due to the reduced scope of works, a number of derogations have been agreed. The Estates embedded Senior Trust Infection Prevention Nurse has been fully engaged in the design process to date and derogations have been reviewed at each of the design stages with the stakeholders and formally signed off.

It has been acknowledged and agreed by The Deputy Director of Estates and Facilities that funding will be sought outside of this business case to provide a new domestic hot water system to the ward. These backlog works will provide a higher level of water safety in line with the new patient profile who will be utilising the refurbished ward.

The signed off derogations are in appendix 17.

### Paediatric Cardiac Outpatient Department

A Paediatric Cardiac Outpatient Department is required for outpatient clinics and non-invasive diagnostic investigations to take place, as well as the imaging of some inpatients if they are well enough to be brought down to the unit (other imaging will take place on the ward or the PICU). The capacity planning took into account the increased activity arising from the increased number of surgical and catheter procedures, whilst including an allowance for some of these patients to be seen as outpatients in peripheral clinics throughout the network.

The clinical models of care and adjacencies (appendix 10) for the cardiac outpatient department have been clinically driven, reflecting current practice and opportunities to transform models of care. These have been reviewed and refined through the design development process. Robust clinical operational policies reflecting the needs of patients have been developed to inform the design brief and solution, which have been based on a combination of Health Building Note (HBN) guidance, and decisions made arising from a thorough clinical design engagement process. As this area is highly specialised, strong clinical engagement has been particularly important to ensure that the needs and requirements of users is met.

The clinical stakeholder engagement included input from the following groups of staff: paediatric cardiologists, cardiac nurses, cardiac liaison nurses, cardiac physiologists, physiotherapists, occupational therapists play therapists, infection prevention and



pharmacists. In addition to this, support from non-clinical staff has included Decontamination and Facilities Management (FM), who work within the clinical areas.

The Cardiac Outpatient Department will be located on the ground floor of the Kensington Building, in a combination of refurbished and new build accommodation (signed off plans are detailed in appendix 29). The department will accommodate six consultation-examination rooms, four echocardiogram rooms (one of which has been increased in size in order to future-proof for larger equipment if required), a stress test room, treatment and venepuncture room, ECG room, weights and measures room, a pacing and tape room, image reporting room, a further two offices and an interview room that will accommodate Clinical Psychology and other allied health care professionals as needed. In addition to this, there is patient support in the form of a large waiting area with dedicated play space, adolescent areas and a breast feeding room. The large reception desk will be used to check patients into the clinic and to provide patients with information regarding their appointments. The disposal hold will be shared with the ante-natal clinics, also situated on the ground floor.

All derogations have been supported and signed off by the clinical leads for the project, the Head of Estates and the Trust's Lead Infection Prevention Consultant, Dr David Jenkins and approved by the Children's Hospital Project Board. These are outlined in the schedule of derogations. The OPD department consists of part new build and part refurbishment of the existing Gynaecology Outpatient department. Due to the nature of these works and the associated refurbishment of existing estates a number of derogations have been identified. These derogations have been raised and reviewed with all stakeholders throughout the design process and have been agreed and signed off accordingly.

The signed off derogations are in appendix 17.

## Support Spaces

The following areas are required to support the paediatric Congenital Heart Service at the LRI, and the capital cost for these areas are included within the scope of this business case:

- ▶ Offices: approximately 50-60 desk spaces (combination of clinical and administration functions) are required at the LRI to support the service. This requirement has been developed based on a combination of the UHL space utilisation policy, and the individual needs of the clinical team. The cost for the provision of office space is included as a Provisional Cost (PC) sum within the capital cost for the business case, and use the next year to progress these options (which include review of the space in Rogers Ward, review of the space in the Jarvis Building L2 and Women's and Children's Management Offices, use of existing EMCHC offices at the Glenfield to allow space for 'office swaps' for staff who do not require a base at the LRI);
- ▶ Multi-Disciplinary Team (MDT) Room: in order to comply with the CHD standards, the EMCHC require an MDT room which has suitable multimodal IT and display facilities as well as remote networking capability including high resolution video conferencing. The Parentcraft Room (Ground Floor, Kensington Building) will be the location for an MDT room, which will be shared with the Maternity service going forward. Substantial refurbishment of this room will be required, and meetings in this facility will be scheduled in order to meet the needs of both services;

- ▶ Enabling Ventilation: the new build extension involves the blocking up of windows in the Assisted Conception Unit (ACU), Maternity Assessment Unit (MAU) and Switchboard which are all currently naturally ventilated. The costs associated with ensuring that existing local ventilation is enhanced in these areas are borne by this business case.
- ▶ Theatres/Cath Lab Changing Room: An additional unisex changing room with individual cubicles and lockers will be created in an existing quiet room, opposite the new build theatre and cath lab extension. This location has been approved by Infection Prevention.
- ▶ Jarvis Access Tunnel: The access from the Kensington Building to the wider Leicester Royal Infirmary site (primarily the Children's Emergency Department, MRI and CT scanning, and wider paediatric services) will be through the tunnel which runs under the Jarvis Building. In order to facilitate the safe transfer of patients on ECMO, the gradient of an existing ramp will be reduced. This was agreed following a mock up walk through of the route, which was supported by the clinical teams.
- ▶ Parents/Carers Accommodation: Additional bedrooms for parents/carers will be leased in the accommodation block on Walnut Street. The revenue for these are identified within the Income and Expenditure position for this business case, and through charitable funding.

### Adult Congenital Heart Disease (ACHD) Facilities

Whilst this business case is primarily concerning the paediatric Congenital Heart service, the adult service (who account for approximately 20% of surgical patients and a higher percentage of catheter cases) will remain at the Glenfield Hospital with the rest of the adult Cardiology service. Through the development of plans for paediatrics, we have ensured that the adult service has what it needs at the Glenfield, in terms of spatial capacity, equipment and workforce. Costs for these are included within this business case (duplication of equipment, and additional staff required).

Patients with ACHD will continue to be cared for in the following areas at the Glenfield:

- ▶ Day cases on Ward 32
- ▶ Surgical Inpatients on Ward 31
- ▶ Cardiology inpatients on Ward 33
- ▶ Adult Intensive Care Unit (AICU)
- ▶ Congenital Cardiac Outpatient Department – patients will be seen in the area that is currently shared with paediatrics, which will be shared with another service TBC going forward
- ▶ Glenfield Central Operating Department
- ▶ Glenfield Cath Labs

## 7.3.2 Overarching Principles of Design Development

### Patient Representation

Throughout the initial clinical planning meetings through to the detailed design process, patient representation has been a key component of the output. The particular areas of focus have been the cardiac ward and the outpatient department, as these are the areas with most patient and family interaction, as well as the areas upon which most influence can be had. The patient representative attended the clinical design meetings for these areas, where her role was to be the voice of the patient and their



parent(s)/carer(s). All comments or views made were considered, and the design was adapted accordingly, if clinically appropriate to do so.

Discussions related to:

- ▶ The proximity of parent(s)/carer(s) facilities, including bedrooms and pull-down beds, lounge and kitchen space;
- ▶ Design and facilities within the outpatient department waiting area;
- ▶ Patient entertainment, including iPads and facilities in the play and adolescent rooms;
- ▶ Thermal environment; differential care needs for neonates / small infants and older children and ability for cooling as well as heating.

### Privacy and Dignity

Senior members of nursing staff for each area have been fully engaged in the design process and have advised on best practice with regards to optimising privacy and dignity in the retained estate wards, including consideration of bed spacing, hand wash provision, single rooms, the location of privacy curtains in clinic rooms and the use of privacy blinds in internal windows. As this project relates to services for children, there is no specific requirement regarding same sex accommodation, however consideration has been given to the design and layout of areas for adolescents ensuring adequate side rooms for older children if required.

### PLACE

PLACE is a patient-led system for the assessment of the quality of the patient environment. The assessments are undertaken each year and the results published to help drive improvements in the hospital environment.

The schemes will improve PLACE scores in the following ways:

- ▶ Decoration will be bright and co-ordinated;
- ▶ Lighting will be used to enhance the environment;
- ▶ Furniture will conform to infection prevention requirements i.e. open at the back so as not to collect dirt and made from wipe-able material;
- ▶ Areas will be ventilated to ensure odours do not linger;
- ▶ Natural light will be maximised; this includes the provision of roof lights in the ICU extension;
- ▶ The provision of adequate storage will promote a tidy environment;
- ▶ The appropriate use of handrails in toilets and on corridors;
- ▶ Colour contrasting and signage will support a child-friendly environment;
- ▶ Designs will address privacy and dignity issues;
- ▶ Equipment will support patient orientation and a calming environment through the use of colour, large day and date clocks in patient bays and the provision of silent close bins.

The table below shows UHL's PLACE results for the last two years, in comparison with the national average. This project will support the overall improvement in UHL's PLACE scored.

Year	Cleanliness (%)		Privacy and Dignity (%)		Condition and appearance (%)		Dementia (%)		Disability (%)	
	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
GH	98.69	99.36	78.60	83.88	89.69	92.53	77.42	79.65	87.85	86.43
LRI	97.49	98.82	77.43	78.88	87.93	90.72	74.36	76.53	84.82	91.95
LGH	98.20	98.84	79.48	77.05	86.48	88.69	72.7	77.55	84.29	91.73
<b>Trust Average</b>	<b>97.93</b>	<b>98.95</b>	<b>78.14</b>	<b>79.66</b>	<b>88.03</b>	<b>90.71</b>	<b>74.72</b>	<b>77.48</b>	<b>85.42</b>	<b>90.60</b>
National Average	98.40	98.47	83.70	84.16	94.00	94.33	76.70	78.89	82.60	84.19

Table 68 UHL PLACE results

## Health and Safety

Engagement with the Facilities department has been undertaken throughout each of the design stages. Numerous lessons learnt from previous delivered schemes across the UHL Estate have been implemented on these projects, such as ensuring adequate cleaners' cupboards are available and architectural details to enable easier cleaning of hard to reach surfaces (fixed cupboards that do not meet the ceiling will have sloped tops etc).

Ongoing meetings and service reviews will be held between the Facilities department and Health and Safety team as the scheme progresses over the next 18 months to ensure a fully coordinated approach and provision is achieved when the service goes live in December, 2020.

## Facilities and Maintenance

The Health and Safety team have been engaged on the scheme and have not raised any serious issues or concerns with the current proposals with regards to ongoing maintenance. A Principle Designer has been employed for each of the projects and has undertaken subsequent reviews of the design, ensuring maintainable access for the Estates Department and ensured that the designers have undertaken the relevant design risk assessment for each of the schemes. They will also review and comment on contractors proposals and RAMs during the construction phase.

Ongoing meetings and design reviews will be held with the Health and Safety Team with the main focus ensuring that they are engaged and satisfied prior to any construction works commencing or high risk construction activities, such as the lifting of the modular units into position for the new build extension.

## Fire Safety and Prevention

Fire code compliance is ensured through the development of the robust design. UHL has a directly employed a Fire Advisor, who has worked with the design teams to ensure fire code compliance. The Fire Advisor has signed off detailed designs at FBC stage (see appendix 19).

## Access during Construction

The Trust recognises that the extensive work at the Leicester Royal Infirmary requires careful consideration of the access arrangements during the construction and post construction period in terms of consistent way-finding and communications as there will be three separate construction sites, impacting on one elevation of the hospital.

During the period of the works, public access to the building will be maintained at all times and all entrances will remain open without additional restrictions. If restrictions are required, for example during the installation of the modular units for the new building, these will be fully coordinated and communicated in advance of the works.

The new build element will require the closure of one lane on Jarrom Street during the construction phase, including the closure of a footpath. The Trust will ensure that the appropriate approvals are sought and issued by the local Highways Department prior to the commencing work. The Trust will undertake regular reviews on site with the contractor to ensure the proposed mitigations are compliant and providing a safe alternative route for pedestrians and vehicles.

The construction site plan for the new build element can be found in appendix 31. The site welfare locations for PICU and Cardiac will be established prior to going out to tender.

Work to refurbish two wards and an outpatients department at the LRI will present a challenge to our ability to separate the movement of goods and waste to and from the building site from public and patient activity. Mitigations to deal with this issue can be found in the Business Continuity Plan in section 7.6.

## Access post Construction

The condition of the patient will range from medically unstable to fully ambulant, and the space for the EMCHC is designed accordingly to ensure that all patients have equality of access. It will be fully integrated with the access routes for the wider Children's Hospital, particularly with the following areas located outside of the scope of this project:

- ▶ Paediatric 1.5T cardiac-capable MRI scanner (L0 Balmoral)
- ▶ CT scanner (L1 Balmoral during daytime, Emergency Department OOH)
- ▶ Paediatric Respiratory Physiology Department (Children's Development Centre, L0 Windsor)
- ▶ Neonatal Unit (L2 Kensington)
- ▶ Paediatric Inpatient Wards (L4 Balmoral and Windsor)
- ▶ Paediatric Outpatient Departments
- ▶ Paediatric Emergency Department

The models of care indicate the routes that patients accessing the hospital will generally arrive by (appendix 10).

Patients may arrive at the Leicester Royal Infirmary (LRI) by air ambulance, ambulance, by car, by public transport or on foot. It is assumed that patients arriving by ambulance will go through the Paediatric Emergency Department (PED) or admitted directly to PICU, often by CoMET (the East Midlands Paediatric Transport Team).

There must be easily accessible routes to and from the bus stops on Aylestone Road and to public parking.

The two points of access to the Kensington Building are the Kensington Main Entrance (shared with Maternity and Neonatal services) and the Jarvis Tunnel, which allows under cover access to the Balmoral and Windsor Buildings and the Paediatric Emergency Department.

Access to all paediatric areas will be restricted according to the Trust's security policy. The PICU, Cardiac Ward and Theatre/Cath Lab Department will all have video-access control for visitors, and swipe card/proximity access for members of staff. The Outpatient Department will be open during clinic hours, and locked out of hours (OOH).

The design solution will be sensitive to the diverse cultural and religious requirements of the population, particularly regarding privacy and dignity.

The detailed processes required to transfer a patient from one clinical area to another will be detailed in the Standard Operating Procedures (SOPs) as they are developed, in advance of the service moving to the LRI.

Way-finding post-construction has been accounted for within the Business Case, with the Kensington Building signage being updated to reflect the new services. The site wide plan and way-finding signs within the main hospital will not be updated as the 2 storey extension to the Kensington Building does not significantly change the site and understanding of the existing information for the general public.

"Blue light" access to the LRI site will not change during or as a result of this development.

### 7.3.3 IM&T Strategy

The Information Management and Technology (IM&T) strategy to support the successful transfer of the EMCHC is to ensure that all of the existing systems in use can, and will be, replicated across the University Hospitals of Leicester sites to support current service functionality. The expansion of Outpatients, the Pacing clinic and transfer of the Catheterisation Laboratory will mean assurance from an IM&T perspective that the services currently provisioned at the Glenfield Hospital will be commissioned and supported to ensure a seamless transition into their new location at the Leicester Royal Infirmary. Future models of care have been considered and the IM&T teams have worked with the existing services to ensure equipment, hardware, software and applications will be prepared for future service delivery and growth.

The unit will have all relevant Trust clinical IT systems fully integrated within each area. The Trust's IT providers IBM, have been fully engaged throughout the design process and have provided costs for the FBC and confirmed their capacity to deliver the requirements for the project in line with the agreed programme of works.

The new Hub room within the new build element will serve the IT requirement for the Theatre, Cath Lab and the Outpatient Department. The Hub room has been designed to meet the new enhanced specification in relation to functionality and resilience.

## 7.4 Leadership and Stakeholder Engagement

### 7.4.1 Clinical Leadership

Clinical leadership is a key factor to the successful delivery of the project objectives, with the following leads playing key roles within this:

- ▶ Clinical and non-clinical leadership from within the Women's and Children's Clinical Management Group (CMG) has been critical, and this has been key in the development of models of care, clinical operational policies and input to and sign off of design solutions. This has included the CMG Clinical Director, CMH Head of Operations, EMCHC Head of Service, EMCHC Medical Lead and EMCHC Nursing Lead. These have been of paramount importance when difficult decisions or compromises have been made in order to deliver the business case within its constraints, ensuring that the brief is met and the delivery of both a clinical and cost effectiveness solution for the provision of patient care:
- ▶ Clinical and non-clinical leadership from Intensive Care, Theatres, Anaesthetics, Pain and Sleep (ITAPS), Renal, Respiratory, Cardiac and Vascular (RRCV) and Clinical Support and Imaging (CSI) have also been involved when key decisions have been made.

### 7.4.2 Stakeholder engagement

Stakeholder engagement is a vital part of the project in order to ensure that all needs are met through the delivery of the project.

#### Internal Stakeholders

The following internal stakeholders have been consulted through the development of this business case:

- ▶ Staff: Engagement with clinical leads has taken place through the development of the designs, equipment schedule and workforce and Organisational Development (OD) plans for the project. This has included clinical engagement meetings and an OD cultural audit. In addition to this, a quarterly newsletter has gone out to staff to update them on the project, and the Project Manager has attended the EMCHC Specialty Board meeting on a bi-monthly basis to provide an update. A full version of the communications and engagement plan is detailed in appendix 4.
- ▶ Internal clinical support services: Engagement has been undertaken and is ongoing with a range of clinical support services impacted by the project, including:
  - Imaging (CT, MRI, Plain-film)
  - Pharmacy
  - Physiotherapy and Occupational Therapy
  - Speech and Language Therapy (SALT)
  - Play Therapy
  - Dietetics

- Bone Bank (Heart Valves)
- Pathology (Blood Transfusion)
- ▶ Estates and Facilities Management (FM): Leads from the Estates and Facilities management team have been fully engaged in the project with regards to the impact of the moves from an estates, infrastructure and FM perspective.
- ▶ Leads from Infection Prevention, Security, Health and Safety, Manual Handling and Fire Safety have been liaised with through the development of plans for this project. This has included external advice and support where appropriate.

### External Stakeholders

The following external stakeholders have been consulted through the development of this business case:

- ▶ Patient Partners and Representatives: the Trust has a network of Patient Partners who work with the CMGs in the development of services. The Patient Partner lead (Patient Representative) is a key member of the Project Board and has supported the project through external engagement, including a programme with local schools in which she went and spoke to pupils regarding their experiences in hospital, what was positive and negative, and regarding facilities they would like to see in a hospital. In addition to this, the patient representative spoke to existing patients and their families, asking them what they like/do not like about the hospital environment, in order to involve them in the planning of space. The patient representative has attended clinical design engagement meetings, in order to act as the 'patient voice', and to feed this information into the planning process. The patient representative who has been supporting this project has recently stepped down, however a new representative has been appointed and will progress this role with the project.
- ▶ Commissioners: there is representation from Leicester City CCG, as the lead commissioner for UHL, and NHSE Specialised Commissioners on the Children's Hospital Project Board.
- ▶ Charities: the EMCHC is lucky to be well supported by two local congenital heart disease charities – Heartlink and Keep the Beat. Both charities engage with the project through the EMCHC Specialist Board meetings and charity Board Meetings, as well as on an individual basis in ad hoc meetings. They have been extremely supportive of the project, and are providing financial support for some areas.

### 7.4.3 Interface with Community Partners

Through the development of the transition plan, East Midlands Ambulance Service (EMAS), the paediatric transport team (CoMET) and the neonatal transport team (CenTre) will be liaised with regarding the transport of paediatric congenital patients.

### 7.4.4 Consultation

A national consultation on Congenital Heart Services was carried out by NHS England as a part of the development and implementation of the congenital heart disease standards. As this business case relates to the delivery of these standards, there is no requirement for further formal consultation.



## 7.5 Patient Experience and Safety

Quality of care and the patient experience is an important aspect in the delivery of an improved patient environment in all parts of this project. For example:

Location of each new facility has been carefully considered so that the adjacencies and co-dependencies for each service can maximise the patients' experience during their time being treated at the Trust. The new wards and theatre have been located within the same building at the Leicester Royal Infirmary with further measures proposed to ensure the services work efficiently together, such as the installation of lift call override.

Through imaginative use of lighting and colours, patient and staff experience will be enhanced. This has been taken into account during the interior design development and will be further developed during the next design stage.

The new Theatre, Cath Lab, Stress Test and Echo rooms will benefit from being in a new purpose built facility and ensure the built environment will provide the most efficient space for the services to function in. The building has been designed around the service requirements and will be in a landmark extension for the Leicester Royal Infirmary Site.

The new PICU and Cardiac Ward will be provided within the existing Kensington Building. Due to the nature of these wards it was essential that the design included parent rooms, parent lounges and playrooms for the patients. This has been achieved within these proposals and will aid in supporting both the patients and parents during their stay at the Trust. The new Children's Outpatients Department will benefit from echo rooms within the new purpose build facility with the remainder of the department provided within the existing Kensington Building. An internal breakthrough corridor will be incorporated to ensure good patient flow between new and existing structures and a reception and waiting area with play and gaming zones will feature within the central space of the department.

### 7.5.1 Quality of Care

EMCHC already delivers extremely high quality care and outcomes for CHD and ECMO patients from across the region and country. Therefore one of the principal aims of this project is to preserve these outcomes and where there are areas that can be improved, to do so.

### 7.5.2 Patient Experience

One of the potential areas for improvement is in equity of access to care input from other speciality areas; in particular the neonatal and paediatric surgical specialists, and paediatric Gastroenterology and Neurology. It is to be hoped that same site co-location will increase immediacy of emergency specialist input but perhaps more importantly, to increase routine day to day input, shared care and ownership of more complex patients and enhanced Multi-Disciplinary Team (MDT) decision making. It is also anticipated that there will be enhanced reciprocal availability of cardiac input and expertise for neonatal and general paediatric admissions, which will have an overall uplifting impact on the day to day paediatric provision at UHL.

In the short term, the co-adjacency of neonatal and paediatric cardiac services will enhance night time provision of SHO level (ST3) cover for both the paediatric cardiac



ward and special care cover with the potential for shared cover and enhanced recruitment opportunities. Different models of care for neonatal ECMO provision are also possible.

### 7.5.3 Safe Design

Safe design is imperative to the successful delivery and operation of all patient environments. This covers a number of important aspects including:

- ▶ Safety of the patient by minimising risk in terms of infection control, movement around the clinical space, and environmental design to minimise slips, trips and falls;
- ▶ Personal safety to ensure risk of personal attack, loss of property etc. is minimised;
- ▶ Construction Design Management (CDM), which ensures minimised risk and optimised safety during the construction process;
- ▶ Safety in the working environment, which optimises safety for staff in terms of ergonomics and health and safety.

All these safety aspects are being considered within the design process and undertaken via a joint approach between the Principle Designer, Infection Prevention, Clinical Staff and the Design Team. This will reflect patient, staff and goods flows within and between areas.

### 7.5.4 Infection Prevention (IP)

Infection prevention leads have been fully involved in the design process; there is some derogation from HBNs which has been ratified with their involvement and signed-off. The estates embedded Senior Infection Prevention Nurse has also been involved in the design development from the outset and all issues and concerns have been addressed and the design signed-off at this level. The positioning of fixed items within bedded areas, kitchens and dirty utilities (where significant changes are made) has been directed by the IP Nurse and reflected within the design. On-going design detail with regards to position of hand sanitizers, dani-centres, soap etc. will be decided on site during the commissioning stage at the request of the IP Nurse and clinical representatives.

The relevant standards applied include, but are not limited to HBN00-09 “Infection Control in the Built Environment”, HTM03-01 “Heating and Ventilation in Healthcare” and HTM04-01 “Safe Water in Healthcare”. The Derogation Schedules attached at Appendix 17 confirm the documents to which design standards have been developed.

Construction sites will be monitored throughout the programme from initial set-up to facility commissioning. Dust control, water testing and flushing regimes and Aspergillus risk assessments will all form part of contract agreements. Infection Prevention colleagues will be actively involved throughout the process.

## 7.6 Business Continuity Planning

The purpose of this section is to define the transitional plan and operation requirements that will ensure the safe and effective delivery of a fully operational live hospital

environment at the Leicester Royal Infirmary site, during the course of construction works.

Business continuity planning is a vital component of developing the construction programme. It falls into two distinct elements:

- ▶ Planning for known business continuity issues (e.g. noise, access). These issues will be addressed through a risk management process and mitigated through planning, communication and a costed risk allowance;
- ▶ Planning for unforeseen eventuality such as severing a main electricity supply cable. These issues form part of UHL's emergency business continuity plans. The risk will be managed through thorough site surveys, planning and ensuring that business continuity plans are updated and understood with all clinical services at risk of disruption.

The principles underpinning the delivery of these objectives are as follows:

- ▶ Services to patients are not interrupted as a consequence of the construction;
- ▶ Safe quality clinical care is maintained throughout ensuring adherence to CQC and other quality and performance standards;
- ▶ Continuity in provision of emergency care 365 days per year, 24 hours per day 7 days a week;
- ▶ Other services and business functions in the area of construction continue as business as usual;
- ▶ An effective communications and engagement plan underpinning the plan provides relevant and up to date information for patients, staff and the public;

The Trust has made consideration of the complete site in ensuring business as usual activity at Leicester Royal Infirmary during the construction period associated with these schemes. During this period there will be a significant new build extension, two ward refurbishments and a minor refurbishment within an Outpatients department in the Kensington Building. These plans are fully articulated along with the high level plan for the new extension outlined within the sections below for each individual scheme. In addition, appendix 31 shows the proposed site plan for the contractors' site during the new build extension and construction traffic movement, which articulate the separation of the activities.

The table below details risks identified and their mitigations:

	Issue	Area	Risk	Mitigation
<b>Planned</b>	<b>Access to hospital</b>	Construction Site/Project	Number of construction sites impacting on roads/entrances	Define public entrances and access routes through local signage

P 1a	Issue	Area	Risk	Mitigation
	Access of construction materials and workers	PICU and Cardiac Wards	Impact on Trust goods and staff using Fire escape stairs on west side of the Kensington Building. Risk associated with moving materials from the construction site into patient and staff areas.	Establish time periods for contractors to use staircase to deliver materials and move waste.
		New Build Extension (Theatre, Cath Lab and Part of OPD)	Construction deliveries in and around Jarrom Street impacting on deliveries and general traffic movements.	Site compound to be formally agreed and approved with local Highways Department. Alternative routes for pedestrians and vehicles to be implemented with appropriate signage. Prior communication to be issued before large number of deliveries to site, for example modular installation.
	Dust / Aspergillus	PICU and Cardiac Wards	Dust permeating adjacent departments	The work area is easily defined and can be segregated from the rest of the hospital and there will be sealed compartmentation to adjacent departments. A negative pressure will be maintained and dust suppression mats will be used at site access points. All waste transferred from the construction site will be within sealed bins. An Aspergillus Risk Assessment will be undertaken and signed off by Infection Prevention prior to work commencing.
		New Build Extension (Theatre, Cath Lab and Part of OPD)		Modular buildings involve significant off-site construction which will eliminate many dust generating activities. The construction site is next to an existing elevation with clinical services operating. Measures will be put into place to reduce the risk of dust entering these

P 1a	Issue	Area	Risk	Mitigation
				clinical areas, for example windows within ACU will be blocked up with the provision of a new ventilation system to overcome the loss of natural ventilation. All works involved with the movement of ground will be dampened down to reduce the spread of construction related dust. An Aspergillus Risk Assessment will be undertaken and signed off by Infection Prevention prior to work commencing.
	Noise	All	Noise disruption to adjacent departments.	Regular communications with all departments that could be affected with prior notification of known noisy periods for each scheme. The scheme will also have a robust policy in regards to who is authorised to stop works when a complaint is received.
	Isolation of Services	All	Loss of services to the Kensington Building affecting other services.	Prior to any planned isolations, a thorough site survey will be undertaken – this will establish isolation points and the impact on adjacent departments. Any issues will be addressed through co-ordinated planning and where necessary, any out of hours working where required. All isolations will be agreed with the Estates Department and prior to any works starting the relevant permit from the AE will need to be issued. Furthermore, an extensive infrastructure upgrade of the Kensington Building has recently taken place; all proposed connections and loadings at design stage will be agreed and signed off with the Project Manager who delivered the infrastructure upgrade scheme.
	Decanting	New Build	Subject to risk	The clinical teams will be

P la	Issue	Area	Risk	Mitigation
		wards/bays	Extension (Theatre, Cath Lab and Part of OPD)	assessment there may be a requirement to temporarily decant clinical areas whilst lifting the modular units into position
Unplanned	Loss of water/ power	All	Risk of loss of power or water to adjacent departments during the construction process	Any works affecting services outside the construction area will be subject to a permit to work. Areas of work will be surveyed to identify any services at risk during the works. Risk assessments and Method Statements will be required to detail the protection and mitigations to avoid accidental damage
	Flood	New Build Extension (Theatre, Cath Lab and Part of OPD)	Low risk due to works being external to the building	All works are external to the building except to penetrations for link corridors. There are a number of services in the ground which will require protecting during the works. Ground Penetrating Radar (GPR) surveys have been undertaken with all services being identified on a utilities plan. Prior to any major earthworks, a permit to dig will be issued by the Authorised Person (AP).
	Flood	PICU and Cardiac Ward	Risk of water leaking from existing services within the site boundary	Works to strip out of existing services will be subject to a permit to work and will require comprehensive isolation and drain down before alterations are undertaken.

Table 69 Business Continuity Issues, Risks and Mitigations

All departments have well established Business Continuity Plans in place and prior to commencement of this extensive site development the Trust will hold a series of Business Continuity Workshops lead by the Trust Emergency Planning Lead. This will enable the Clinical Management Group (CMG) to review and update their procedures and ensure staff are familiar with them.

## 7.7 Workforce

### 7.7.1 Developing the Workforce, Education and Training Plans

The workforce planning element of the EMCHC business case was acknowledged and highlighted as a key component of the overall planning and design process from the outset. The key national driver for the workforce plan came primarily from the NHS England Congenital Heart Disease Standards for Level 1 Surgical Centres for both Paediatrics and Adult (ACHD) published in May 2016 and in particular their sections on Staffing and Skills (Section B). For services not specified in the Congenital Heart Disease Standards, UHL followed the existing workforce safeguards (as outlined in the Oct 2018 NHSI “Developing Workforce Safeguards”) that supports providers “to deliver high quality care through safe and effective staffing”, and NICE guidance.

From a governance perspective, a workforce planning sub group was established in January 2018 that reported directly into the Children’s Hospital Reconfiguration Board and was chaired from the outset by the Head of Operations for the Women and Children’s Clinical Management Group (CMG). It was clear from the beginning of the planning process that the plan needed to address two key objectives in order to provide the right workforce with the right skills in the right place and at the right time. First and foremost was the NHSE stated aim to be co-terminus with the Children’s Hospital and, secondly, to meet increased surgical and associated activity with a plan to move from delivering 375 surgical cases a year to 500 cases per year.

To address the key objectives each service area was asked to characterise their workforce demand in relation to three key components:

- ▶ Delivery of the NHSE CHD standards;
- ▶ The impact of re-locating services (the split of the Congenital Heart service, with the children’s service moving to the LRI and adult services remaining at the GH);
- ▶ Delivering the additional activity.

In order to plan fully, this required looking at over 25 services directly or indirectly impacted by the changes, including the impact on Theatres, Outpatients and the bed base, but also all clinical support services including a range of Allied Health Professionals, Health Care Scientist and Technical roles as well as Nursing, Medical, Administrative, Managerial and Estates and Facilities staff.

#### Methodology

The methodology adopted is standardised where possible and is applied to all UHL services via the UHL Workforce Strategy which forms part of the UHL People Strategy. The 6 step methodology, originally developed by Skills for Health is the framework for all operational and strategic workforce planning and begins with defining the plan, then mapping the service change and then defining the required workforce. Taking those first three steps together involved describing the current baseline by staff group and grade, then analysing the activity and associated services changes to predict the future demand for workforce. A narrative was required for each service area as well as consideration of the availability of the workforce at all levels. By mapping out the current workforce and analysing the vacancy position, recruitment and retention issues and any innovative solutions to the desired workforce of the future, each service put forward a costed workforce plan. The workforce plan was peer



reviewed internally by a range of clinical stakeholders, primarily in a workshop held in July 2018, but then subsequently updated via the Children's Hospital Reconfiguration Board. To provide a senior challenge, a Workforce Star Chamber process was also utilised in January and February 2019, including executive leads for Medical, Nursing and Heads of Operational teams from all impacted CMG's plus workforce, finance and project leads. This was also attended by a Congenital Cardiologist from the Royal Brompton Hospital, who provided a valuable external independent review and challenge.

The workforce demand from each service was categorised by the impact it would have on achieving the stated need to deliver the CHD standards, relocation and activity growth or any combination of the aforementioned. The process required a detailed analysis for each service of the safe and sustainable staffing levels required to deliver services during day time and night time hours, and, where appropriate, at weekends. The implications of splitting some services that are currently a shared adult and paediatric service at Glenfield Hospital has led to inefficiencies in some areas as some specialist teams will now have to deliver across two sites rather than one. These may be offset in some cases by some efficiencies of a co-located paediatric team at the LRI, however, in the main, the need to deliver across multiple sites far outweighs the short term gains. The longer term Children's Hospital project to have a co-located footprint based at the LRI (for example having a larger but co-located PICU service) will result in greater efficiencies, but in the short term the need to house these services in the available space and within the appropriate budget means that some efficiencies cannot be found until the longer term project and objectives are achieved. The PICU example will mean the services based on one site but in different locations, resulting in a small efficiency initially, but a potentially much larger gain once the Children's Hospital is fully co-terminus.

From a workforce safeguards perspective, where possible UHL followed the National Quality Board (NQB) guidance and utilised professional judgement, evidence based tools where they exist (within UHL we utilised the Directorate of Nursing acuity tool kit to ensure the nursing areas, particularly the Cardiac Ward and PICU were compliant looking at acute hours per patient metrics) and outcomes. This informed the nurse-to-bed ratio. The use of the Star Chamber included the Director of Nursing and Medical Director and their assessment of safe, effective and sustainable staffing.

## 7.7.2 Training and Development

A key impact of the co-location of services to the LRI is the establishment of teams that now have to cover more than one site. The training and development implications for these teams are significant as the skill set for a range of workforce staff groups will need to encompass training of, and experience in, both Congenital Heart Disease and Paediatrics, whilst maintaining an adult service at the Glenfield Hospital. More detail can be found in the workforce plan for each service (attached as an appendix 23) for staff groups like Cardiologists, Surgeons, Clinical Physiologists, Theatre Practitioners and staff working in the Catheter Lab like Diagnostic Radiographers. In readiness for a December 2020 opening date, the training plans for each team were carefully considered, included the training capacity and the need for a transition period in order to train the additional staff required to support new services and get the appropriate supernumerary training and experience in place to plan for a December 2020 opening. The workforce plans include the "front loading" of some of the recruitment in order to train and up-skill the staff appropriately to 'hit the ground running'.



Also included in the workforce plans are key roles that support the future training and development of staff, namely the Clinical Skills Supervisor working in Theatres and the Clinical Educator role in PICU. Both of these roles were deemed essential in both the training and development of current and future staff, and an important element in recruiting and retaining staff in the future. The focus of these key roles is to provide the skills development for staffing to undertake the specialised roles.

### 7.7.3 (Developing Workforce Safeguards) Weekend Workforce / Seven Day Working

A pre-requisite for all workforce plans included a sustainable working pattern that met the safer staffing guidelines and workforce safeguards from NHSI, as well as remaining compliant the CHD standards laid down by NHSE. This included out of hours working assumptions, on-call where appropriate, and alignment with activity assumptions based on current and predicted future growth. Although predominantly a planned 5 day service, the requirement was built-in to provide emergency and out-of-hours cover for key areas like Theatres, including the Catheter Lab, and access to the critical staff groups including Radiographers, Theatre Practitioners and Registered Nurses, Medical staff (Consultant and junior doctors) and Clinical Physiologists. The Theatre workforce plan, for example, included work on detailed rosters to ensure that no staff group or specialised role would undertake an on-call more onerous than a 1:4.

### 7.7.4 New Ways of Working

For each service area consideration was taken about new ways of working and new roles either already in development or likely to be utilised in the near future. Nurse Associates for example are likely to be a key element of the registered nurse workforce, although it is not yet clear how this regulation will impact their role on a ward area, and the impact on other registered staff. In the workforce plan for the Cardiac Ward, for example, consideration for the future utilisation has been considered and there are two trainee associates in post. This is therefore likely to be a future development and therefore no assumptions can yet be made or are currently included in the workforce plan. Physician Assistants are a similar consideration and opportunities from the next cohort that graduate from De Montfort University in Leicester in the Summer of 2019 and 2020 has been highlighted across the Women and Children's division, but will be dependent on successful recruitment. In terms of the workforce plans for EMCHC, these are an additional solution and will need to be considered to fill existing vacancies at ST3 level, or opportunities to replace Trust funded medical posts, and this will be done on a case-by-case basis.

Theatre Practitioners and Clinical Physiologists are two other teams that have plans to work differently moving forward. The combination of specialist skills in a new environment has created an opportunity to look at new ways of working and developing new roles. One example is the development of a Theatre Catheter Lab support worker with extended skills to cover the role that is currently undertaken by a registered Catheter Lab nurse at Glenfield Hospital. The CHD standards describe a "runner" with specific knowledge around Cath Lab equipment and packs that can be undertaken by a theatres support worker with additional skills and training in the Cath Lab. The qualified Theatre Practitioner will substitute for the Cath Lab nurse in the short term, with the view that a Band 3 or Band 4 Cath Lab worker will be developed to provide the appropriate skill set to fill the role whilst also creating an efficiency.

For the Clinical Physiologists and the Imaging staff working at the LRI, there is a chance to develop a longer term model of a Children's Specialist team, as the Theatre Practitioners are already developing. The sub speciality work of the Physiologists who are currently utilised into separate teams for invasive and non-invasive work will be given the opportunity to experience work across both settings, either via secondments or rotations into the different areas of work in outpatients and the Cath Lab for example. This will support a wider range of skills for the Physiologists that help their personal and professional development whilst creating more flexibility around staffing for the deployment of the services moving forwards.

### 7.7.5 Attraction and Retention

An acknowledged risk for the workforce plan is the workforce supply of some of the key staff groups that support the CHD service. Registered Children's Nurses are a local and national workforce supply risk due to the number of vacancies but a great deal of work has been undertaken over the last 5 years to bridge the gap. Working closely with DMU, a second cohort was added to the yearly field of practice and the first outputs from the new cohort will begin to come on stream from March 2020 onwards. This is in addition to the existing yearly output in September and will be a significant benefit to recruitment. Traditionally, a once a year output is difficult to manage as the newly qualified staff come out as winter pressures begin and typically vacancies are at their highest levels due to the difficulties in recruiting other qualified staff when vacancies are high across the country.

Theatre practitioners are another key staff group that are undergoing a change to the supply route as the local provider, Leicester University, is moving to 'all-degree' from the diploma route. This additional year of training means that Leicester has a "fallow year" in 2019 for Operating Department Practitioners (ODPs). This accentuates the vacancies we already have with qualified nurses working in Theatres: the requirement to increase the number of Theatre Practitioners is a significant risk. To mitigate against this, the ability to recruit into Children's Theatres is significantly better and recruitment will begin early. This is already underway with open days and Theatre specific recruitment. Recruitment and retention in Clinical Supervisor roles in Theatres and the Education Supervisor in PICU will give UHL long term benefits in attracting and keeping registered Nurses.

Recruitment will be greatly enhanced by the longer term development of a Children's Hospital footprint at the LRI. The EMCHC move from Glenfield Hospital is a significant step towards a single site Children's Hospital, and early indications from discussions with current Paediatric Cardiology Ward (Ward 30) staff is that the majority are keen to transfer sites and the benefit of being closer to other Paediatric nursing teams is a significant consideration. The paediatric nursing team at Glenfield has voiced longstanding concerns about their isolation from other paediatric nursing groups and the move will resolve this, which bodes well for future recruitment also. This supports the financial case regarding reduction in spend on premium pay and sickness absence.

Recruitment fairs and longer term recruitment plans have been developed since the second half of 2017 in order to take advantage of the increased certainty over the future of the EMCHC service. The previous uncertainty has contributed to higher turnover in the recent past but the opposite effect is now expected and, indeed, anecdotally emerging. Other staff groups that have known workforce supply issues nationally, such as Radiographers, are actually in a healthier state locally due to

concerted recruitment activities for some years including international recruitment and development of strong links with local university providers, for example with Derby University. For key Medical posts, international recruitment has also been instrumental in successfully filling junior / training as well as Consultant posts. Paediatric Intensive Care is another high risk area and although the current supply of junior doctors has reduced the number of gaps significantly, this is known to fluctuate from year to year.

### 7.7.6 Human Resources (HR) Planning

From an HR perspective, UHL has a Management of Change Policy (Dec 2015) that provides the framework for managing organisational or service changes which impact on established roles and/or staff numbers. The policy has two main aims which are:-

- ▶ To help ensure that the Trust undertakes the management of change in a manner which is compliant with its statutory and contractual obligations;
- ▶ To provide transparency in relation to the processes for managing change to help ensure that the staff affected are dealt with equally and fairly.

This policy is available on the UHL Insite page and is regularly reviewed in partnership with staff side colleagues and is maintained by the Human Resources team at UHL. A HR plan (appendix 30) has been developed which outlines the process and timescales to be followed in delivering the service moves; this is aligned with both the workforce plan and will help to form the Organisational Development plan. In addition the Transitional Plan will be developed as the project progresses.

## 7.8 Learning and Continuous Improvement

### 7.8.1 Evaluation of Lessons Learned

The role of the leadership team is pivotal in engaging with, delivering and sustaining the required change and behaviours to deliver the models of care as outlined within this project. It is essential to identify, consolidate and 'live the way' from an early point in the project lifecycle and then hold everyone to account right through and post project with clear guidance, training, direction and consequences to enable a consistent and transparent culture to operate.

To support this transition the Trust has the use of in-house development programmes, a clear capability framework and on-going OD support, the cost for which is identified within this business case.

# Appendices

Appendices are attached as separate documents and consist of the following:

Appendix 1	Project Initiation Document
Appendix 2	Clinical Operational Policy
Appendix 3	NHS England Congenital Heart Disease Standards and Specification
Appendix 4	Project Communications and Engagement Plan
Appendix 5	Equality Impact and Due Regard Assessment
Appendix 6	Risk Potential Assessment
Appendix 7	Project Risk Register
Appendix 8	Costed Risk Registers (Project Specific)
Appendix 9	Shared Business Services Framework
Appendix 10	Clinical Models of Care and Adjacencies
Appendix 11	PICU Signed Off Plans
Appendix 12	Fully Costed Equipment Schedules
Appendix 13	Pre Tender Estimates and GMP Report
Appendix 14	Experian Credit Report for MTX
Appendix 15	Project Drawings
Appendix 16	Schedules of Accommodation
Appendix 17	Schedules of Derogations
Appendix 18	BREEAM Pre-Assessment
Appendix 19	Fire Officer Signed Plans
Appendix 20	Sustainability Management Plan
Appendix 21	Travel Plan
Appendix 22	Full Business Case Capital Cost Forms
Appendix 23	Work Force Plan
Appendix 24	Project Programme
Appendix 25	Benefits Realisation Plan
Appendix 26	Change Management and Delegated Authority Policy
Appendix 27	Theatre and Cath Lab Signed Off Plans
Appendix 28	Cardiac Ward Signed Off Plans
Appendix 29	Cardiac Out Patient Department Signed Off Plans
Appendix 30	Human Resources Plan
Appendix 31	Construction Site Plan



**University Hospitals  
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**Full Business Case | Children's Hospital Project Phase I (EMCHC Co-  
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